An Bord Pleanála

Inspector's Report ABP-309937-21

Development	10 year planning permission and 35 year operational life for Wind Farm
Location	Rossacurra, Cranemore, Kilbrannish North, Bealalaw, Raheenliegh, Aclare, Co. Carlow
Planning Authority	Carlow County Council
Planning Authority Reg. Ref.	2113
Applicant	Coillte CGA
Type of Application	Permission
Planning Authority Decision	Refuse Permission
Type of Appeal	First and Third Party
Appellants	Coillte CGA Sarah Durdin Robertson (c/o Peter Sweetman) Save Mount Leinster (c/o Joe Noonan) Nearest Neighbours Group (c/o Patrick McLean) Martina Kinsella

	Irish Hang Gliding and Paragliding Association
Observer(s)	See Appendix A
Date of Site Inspection	3rd June 2022
Inspector	Niall Haverty

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1.0 Site Location and Description

1.1. The appeal site, which has a stated area of 245.92 ha, is located at Croaghaun Hill (also referred to as Croaghaun Mountain) in eastern County Carlow, c. 2km from the border with County Wexford. The site is located within the Blackstairs Mountains, to the north of Mount Leinster. The site is c. 1.5km south east of the village of Myshall and c. 5.5km west of Bunclody. More particularly, the site is located within the townlands of Rossacurra, Cranemore, Kilbrannish North, Bealalaw, Raheenliegh and Aclare.

1.2. The site primarily comprises coniferous forestry plantation, with smaller areas of heath, bog and agricultural lands. There are a number of forestry tracks and walking trails through the site, which are known as the Kilbrannish Forest Recreation Area. The site is accessed from the L2026 local road to the south.

1.3. An existing wind farm with 5 No. turbines, known as Greenoge Wind Farm, is located further to the south east of the site.

2.0 Proposed Development

2.1. Overview

2.1.1. The proposed development consists of a wind farm with a stated potential output of c. 38.5MW and it is described as follows:

- Construction of up to 7 No. wind turbines with a maximum overall blade tip height of up to 178m;
- Construction of turbine foundations and crane pad hardstanding areas;
- Construction of new site tracks and associated drainage infrastructure;
- Upgrading of existing tracks and associated drainage infrastructure where necessary including upgrade of entrance onto L2026;
- All associated drainage and sediment control including the installation of new watercourse or drain crossings and the re-use or upgrading of existing internal watercourse and drain crossings;

- Construction of 1 No. permanent onsite 38kV electrical substation to ESBN specifications including: control building with welfare facilities; electrical infrastructure; parking; wastewater holding tank; rainwater harvesting; security fencing; all associated infrastructure, services and site works;
- 1 No. temporary construction site compound and associated ancillary infrastructure including parking;
- 1 No. on site borrow pit accessed via wind farm access tracks;
- Tree felling to facilitate construction and operation of the proposed development;
- Installation of medium voltage (20/33kV) and communication underground cabling between the proposed turbines and the proposed on-site substation and associated ancillary works;
- Erection of 1 No. permanent meteorological mast to a maximum height of 100m above ground level;
- Upgrade of existing forest tracks and paths that shall be re-purposed as recreational amenity trails for community use including signage;
- All associated site development works;

2.1.2. Planning permission is sought for a period of 10 years, with construction estimated to take 12 – 18 months. The proposed operational life is 35 years from the date of commissioning of the entire wind farm.

2.1.3. The application was accompanied by an Environmental Impact Assessment Report (EIAR), a Natura Impact Statement (NIS), various technical appendices and letters of consent from the landowners.

2.2. Associated Development

2.2.1. The applicant states that there are four elements to the proposed project:

- Croaghaun Wind Farm.
- Turbine Delivery Route.
- Grid connection.

- Replant lands.

2.2.2. The appeal that is before the Board relates to the proposed Croaghaun Wind Farm development only. The associated grid connection, turbine delivery route works and forestry replanting do not form part of the proposed development for which planning permission is sought, but it is stated by the applicant that these elements are assessed as appropriate within the EIAR and NIS.

2.2.3. The proposed grid connection route is an underground 38kV cable connecting the proposed on-site substation to the existing 110/220kV substation at Kellistown, Co. Carlow. This grid connection route will have a total length of 21.5km, with c. 20.3km within existing roads. An off-site substation will also be required adjacent to Kellistown substation to step-up the voltage to 110kV.

2.2.4. With regard to the turbine delivery route, the applicant states that temporary accommodation works will be required at certain locations. With regard to replant lands, the applicant has identified sites within Counties Sligo and Limerick to replace the c. 24.4 ha of conifer plantation that would be felled, subject to a felling licence, to construct the proposed development.

3.0 Planning Authority Decision

3.1. Decision

3.1.1. Carlow County Council refused permission for 3 No. reasons, as follows:

1. Having regard to the location of the proposed wind farm development in the Blackstairs and Mount Leinster Uplands Landscape Character Area, and the overall size and scale of the proposed development comprising of 7 No. wind turbines with a maximum blade tip height of 178 metres, it is considered that the proposed wind farm development would have an adverse visual impact on the Blackstairs and Mount Leinster Uplands Landscape Character Area, with the proposal resulting in very significant landscape visual impacts on designated scenic route numbers 10, 11, 12 and 16, and designated protected views 1, 4, 24, 29, 30, 35, 36, 38, 39, 41 and 42 as identified in the County Carlow Landscape Character Assessment within Appendix 6 of the Carlow County Development Plan 2015-2021.

The proposed development, therefore, would adversely interfere with the character of the landscape and would contravene the 'County Carlow Landscape Character Assessment and Schedule of Protected Views' within the Carlow County Development Plan 2015-2021. Accordingly, the proposed development, if permitted, would be contrary to Heritage Policy 1 of the Carlow County Development Plan 2015-2021 which seeks to 'Protect designated Views, Prospects and Scenic Routes in the county as appropriate'. The proposed development is therefore considered contrary to the proper planning and sustainable development of the area.

2. The proposed development site is located in close proximity to the Blackstairs Mountains SAC (Site Code 000770) with indirect upstream hydrological links to the Slaney River Valley SAC (000781) and the River Barrow and River Nore SAC (002162). The application site and associated study area also contain an area of Annex 1 habitat identified as 'European Dry Heaths' (4030) which forms part of the National Annex 1 European Dry Heath Habitat resource. The potential loss of such Annex 1 habitat resulting from the proposed development may affect the habitat's national conservation status which is protected under the Habitats Directive. Furthermore, the application documents and EIAR report do not satisfactorily demonstrate that the proposed development will not adversely impact on Bat populations in the area protected under the Habitats Directive and the Merlin bird species and other migratory birds protected under the EU Birds Directive.

   Based on the foregoing and the information submitted with the application the Planning Authority is not fully satisfied that the applicant has adequately demonstrated that the proposed development, would not give rise to ecological and biodiversity impacts on flora and fauna in the area and as such would materially contravene Heritage Objective 5 of the Carlow County Development Plan 2015-2021 which seeks "to support the protection of habitats and species covered by the EU Habitats Directive….." and to "ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on plant, animal or bird species protected by law. To permit the proposed development on the basis of information submitted would materially contravene the provisions of the Carlow County Development Plan

2015-2021 outlined above, including Heritage Policy 2 “to only authorise development after the competent authority has ascertained, based on scientific evidence that the plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European Site. The proposed development would therefore be contrary to the proper planning and sustainable development of the area.

3. The proposed wind farm site is located in an upland area of the Blackstairs Mountains which is predominately served by a local road network of restricted width and capacity. Having regard to the site location, and the condition of the existing road network proposed to access the site during the construction period, it is considered that the application documents and accompanying Environmental Impact Assessment Report fails to satisfactorily demonstrate that the local road network is of adequate capacity and design to accommodate the volume and frequency of HGV traffic proposed along the haul routes during the construction period. Accordingly, on the basis of the information submitted, the proposed development will likely have a significant adverse impact on the local road network, would endanger public safety by reason of a traffic hazard and be contrary to the proper planning and sustainable development of the area.

3.2. **Planning Authority Reports**

3.2.1. Planning Reports

- Site does not include lands at risk of flooding.
- With regard to the contended lack of public consultation, the Planning Authority is satisfied that the applicant has satisfied the requirements for a valid application to be considered.
- Site is within the most important LCA in the County, which is highly sensitive with a low capacity for wind farms. It includes lands that are identified as being ‘open for consideration’ in the Wind Energy Strategy map but the turbine locations are not completely contained within that area. The existing 5 turbine wind farm is noted. The overall principle of the development will be determined by a number of environmental sensitivity factors including the

ability of the landscape to visually absorb the proposed development in addition to residential and general amenity impacts.

- The level of visual impact is not considered compatible with the provisions of the Development Plan to protect this sensitive landscape.
- The applicant would need to address local road design and capacity issues as well as the issue of third party consents from relevant landowners at points where improvement works are required to accommodate the turbine delivery route.
- Notwithstanding any previous grant of permission, the height and scale of the proposed development would result in a very significant landscape visual impact on the area and would materially contravene the provisions of the Development Plan.
- With regard to the assessment of the EIAR, the planning officer generally references the technical reports of the various departments within the Planning Authority and the prescribed bodies submissions (see below).
- The consideration of alternative design options is lacking in detail, particularly with regard to number of turbines and tip heights, noting the landscape sensitivities.
- Human health is a broad factor, and it is considered that the EIAR lacks information regarding potential impacts on biodiversity and protected sites and that the potential impact on the landscape setting and tourism assets including designated scenic routes is understated and not adequately assessed.
- Planning Officer concurs with the CAAS Ltd. report (see below) that the EIAR understates the significance of effects across a number of the selected viewpoints. Notwithstanding the planning history (expired permission for smaller wind farm) there would be very significant impacts on numerous protected views and scenic routes.
- EIAR does not contain sufficient information in relation to the impacts on the local road network. Further studies and consultation with the Transportation

Department would be required. EIAR understates the significance of the traffic impact on the local road network.

- Interactions between factors have been adequately assessed.
- Reasoned conclusion on significant effects:
    - Potential significant landscape and visual impacts and impacts on four scenic routes.
    - Traffic impacts during the construction phase due to quantity of HGV traffic and design capacity and ability of local road network to accommodate this.
    - Impacts on population and human health due to biodiversity, water, air, climate, noise and vibration, landscape and visual and material assets (traffic). Potential impacts would mostly be mitigated, however impacts arising from traffic impacts during construction phase cannot be ruled out.
    - Impact on biodiversity due to removal of habitat, tree felling, disturbance, noise and human activity. Impact on Annex I European Dry Heath (4030) habitat is not fully assessed. Impacts on bat species protected under the Habitats Directive and Merlin and other migratory birds protected under the Birds Directive.
    - Water impacts due to construction and operational phase run-off of contaminating materials. Implementation of CEMP would mitigate impacts.
    - Positive impact on greenhouse gas emissions.
- AA Determination: Application documents and NIS have not satisfactorily demonstrated that the proposed development will not adversely affect the integrity of the identified European sites.

3.2.2. Other Technical Reports

3.2.3. 'Assessment of Likely Landscape and Visual Effects', CAAS Ltd.

3.2.4. The Planning Authority commissioned a report from CAAS Ltd. regarding potential landscape and visual impacts which can be summarised as follows:

- Applicant's description of the likely magnitude and extent of effects is appropriately comprehensive and systematic. Mapping of areas of likely effect and photomontages are also appropriately comprehensive.

- The most significant effects occur within a relatively limited area around the project.
- The applicant's assessment of the significance of the effects needs to be approached more cautiously.
- Turbines located at distances less than 1km are very dominant, giving rise to a very significant effect; those between 1-2km are increasingly less dominant but give rise to a significant visual effect; those at distances greater than 2km are no longer so visually dominant as to give rise to a significant visual effect.
- CAAS assessment of significance at VRPs shows a very high level of agreement with the applicant's assessment with lower impacts (slight/insignificant) and a very low level of agreement with higher impacts (moderate, significant, very significant). (See table 5.3 in CAAS report.)
- From much of the local roads, the proposed development will be screened from view by vegetation etc. This ceases within 2km of the development and the lack of screening is particularly pronounced on elevated ridge routes, such as the South Leinster Way.
- The majority of designated viewpoints and scenic routes in Co. Carlow are to the south west of the Blackstairs and along the main river corridors and do not lie within the zones of potential visibility.
- Granting of permission for Greenoge wind farm creates an important precedent that changes the nature of the receiving environment from a general rural area to one that has been recognised by the Board as being suitable for wind farm development.
- In some instances, such as views 15 and 28, the proposed development would constitute an extension and intensification of an existing/permitted land use (Greenoge wind farm).
- Site and receiving environment have varying degrees of significance and sensitivity. Sensitive receptors include Myshall village and environs, elevated rural settlement, designated viewing points and routes and the South Leinster Way which is part of European walking route E8.

- Very significant landscape and visual impacts will be experienced within 3km from the boundary, including 8km of the South Leinster Way, the summit of Mount Leinster and much of a scenic route and 11 designated views. The impact will fundamentally alter and dominate the appearance and character of the immediate environs.
- Significant impacts will occur in an area that extends to the environs of Kildavin to the east and Shangarry and Ballinrush to the north west. The impact will significantly and conspicuously alter the appearance and character of the immediate environs.
- Level of impacts on designated scenic routes, protected views and a nationally significant walking route that is part of a trans-European network do not comply with either the recommendation of the LCA nor with the relevant provisions of the Development Plan.

3.2.5. Transportation Department:

- Condition recommended to require third party consent to be obtained prior to commencement.
- Condition survey of the roads is required with insurance bond to ensure compliance.
- All costs associated with accommodation works to be met by the developer and all damage to be made good within 6 months.
- Full road closures on grid connection route may not be practical to maintain access to houses and farms.
- Use of no-dig technology should be maximised.
- Main concern with the on-site works relate to the cut/fill operation and the materials removed from and imported to site. Landslide susceptibility and borrow pit stability must be considered as well as drainage run-off.
- Reference is made to a borrow pit that is a ‘potential’ source of material and ‘potential’ site of disposal. This informs the TIA, the findings of which will be in doubt if the potential source is not realised.

- HGV impacts on local roads will be significant if not addressed and mitigated against. Road edge damage likely where HGVs try to pass. TMP with provision for localised widening and lay-bys is required.
- Further information recommended with regard to haul routes and whether or not borrow pit will be utilised. Adequate HGV passing bays are required.

3.2.6. Municipal District Engineer:

- No objection, but some clarification required.
- Clarifications in relation to all proposed alterations to the public roads in order to accommodate the construction period traffic. Where the land is privately owned, letters of consent are needed from the relevant landowners.
- Design details of all proposed road alterations to accommodate construction traffic.
- Details for drainage preservation on the L2026.
- Particulars required for all proposed tree removal locations.
- Protection measures for 2 no. narrow bridges on the L2026 potentially impacted.
- Road condition surveys pre and post works are required.
- Requirement for a road closure licence during turbine delivery periods.
- Applicant should carry out a 'track-analysis' for all cranes accessing the site to identify any issues on the access route in advance.
- HGV traffic volumes on local roads not designed for such loads will require road strengthening before operations begin.
- The Grid Connection route to Kellistown is along L-3033/L-7008/R724/N80/ L-2022/L-7112/ L-3046. All these roads have been upgraded in the past 3 years and are either strengthened using macadam or strengthened using recycling and Cl 804. The excavation for the connection will require the roads to be fully re-strengthened. Queries whether the applicant be requested to utilise 'trenchless technology' for this operation.

- With increased hardstanding areas at the site the applicant will need to provide greater details on surface water management/drainage arrangements to be implemented and also to demonstrate that climate change has been taken into account in their drainage calculations.
- Clarity required on spoil produced onsite and safety measures relating to same on the drainage system during heavy rain or snow melt.

3.2.7. Environment Department (Pat Connolly SEE):

- Recommendation that further information be sought regarding: noise and vibration; biodiversity; lands, soil and geology; hydrology and water quality; shadow flicker; NIS; CEMP; analysis of replant lands; study of alternative locations.

3.2.8. Environment Department (Gary Sofer EE):

- No objection, subject to conditions.

3.2.9. Water Services Section:

- No objection.

3.2.10. Chief Fire Officer:

- No objection, subject to access for Fire Brigade vehicles and water supplies for fire fighting complying with the requirements of the Chief Fire Officer.

3.3. **Prescribed Bodies**

3.3.1. <u>Department of Tourism, Culture, Arts, Gaeltacht, Sport & Media:</u>

- Archaeological monitoring recommended.
- 'recommended' and 'proposed' mitigation is scattered across the NIS and EIAR. It is not clear the exact mitigation that will proceed.
- Role and duties of Environmental Clerk of Works is not clearly defined. It is not clear the duration of their involvement and whether they are the same person as the Ecological CoW described the Biodiversity chapter and CEMP. Clarification required.

- Monthly water quality monitoring is mentioned in the EIAR. It will need to be far more frequent, in particular for suspended solids. Monitoring should extend considerably beyond landworks and response capacity must be in place for any subsequent discharge events.
- Temporary works on Turbine Delivery Route include culverting and piping of drains. It must be explicitly stated that such culverts and pipes will be removed and the timeframe for removal given.
- Wind turbine vegetation free buffers must be kept open by mechanical means only. Given the location of the development in the upper reaches of river catchments, no chemical control methods must be used.
- Contrary to the statements in the EIAR, both areas A and B have been mapped as Annex I European Dry Heaths (4030). The Dept. considers these areas to be part of the national Annex I European Dry Heath habitat resource and losses from the proposed development may affect the habitats national conservation status.
- Indirect impacts on the European Dry Heath may also result from disturbance and habitat fragmentation. Impacts to this habitat need further consideration and should be avoided in the first instance.
- Absence of moss and lichens indicates that the Annex I habitat is likely to be degraded. The overall national conservation status of this habitat is bad. Lichens can return with appropriate management of the heath.
- Dept. queries some of the species listed as being present on areas A and B.
- EU Action Plan for Dry Heath (4030) calls for ‘defragmentation’ of the habitat, meaning increased connectivity between fragments.
- Given Ireland’s obligations in relation to this habitat as well as its bad conservation status, the Dept. considers that the ecological importance of and development impacts on the habitat must be reassessed and further information is required.
- Department is concerned about the impact of the amenity trail provision on ground nesting birds within the site. Recreational disturbance impacts have not been assessed. Studies show recreational disturbance can lead to the

avoidance of certain areas by birds which can impact on breeding and survival. Further information required.

- EIAR conclusion regarding Merlin is not supported by scientific evidence. The observed behaviour indicates that this site is a Merlin breeding territory and should be considered as such. This is in line with standard best practice guidance.
- Merlin is very difficult to detect on Vantage Point surveys and is under-recorded. It is an Annex I species and protected under the Wildlife Act and impacts should be reassessed with regard to SNH guidance document 'Wind farm proposals on afforested sites – advice on reducing suitability for hen harrier, merlin and short-eared owl'. Further information is required.
- Absence of data that could be used to assess potential effects on wider bird migration and passage migrants such as Greenland White-Fronted Geese. Further information is required to assess the impacts on migrating species. Satellite tracking data may be available.
- Aviation lighting design should consider best practice guidance, such as the NatureScot Information Note on the Effects of Aviation Obstruction Lighting on Birds at Wind Turbines, Communications Towers and Other Structures. Other mitigation measures contained in that guidance should be considered.
- Condition recommended to require clearance of vegetation and tree-felling to take place between September to February, inclusive, to protect nesting birds and breeding mammals.
- Further information on hedgerow removal and replanting along the turbine delivery and grid connection routes should be provided to ensure no net loss of biodiversity in accordance with the National Biodiversity Action Plan.
- Invasive species should be managed in accordance with TII Guidelines.

3.3.2. HSE:

3.3.3. Two submissions were made by HSE South Emergency Management and HSE Environmental Health Service, respectively. The issues raised were as follows:

- All water used for drinking/food preparation should meet the requirements of the drinking water regulations.
- Note the importance of adequate and detailed community consultation and engagement. Planning Authority should ensure that adequate consultation has been undertaken.
- Due to available technology, no dwelling should be exposed to shadow flicker.
- Information should be provided of detailed measures to prevent landslides at the turbine sites and grid connection route.
- A number of construction activities will be undertaken concurrently, and clarification is sought that the combined effects of the impacts identified in Tables 9.15 and 9.16 have been considered.
- All wells within 1km of the site boundary and grid connection route should be identified. Baseline water quality information should be obtained for any wells identified.
- Information on turbine specifications and foundation construction should be provided.
- Condition of access roads should be monitored with potholes, cracking etc. repaired in 24 hours to minimise dust and noise as a health protection measure.
- Noise modelling based on turbine model with height of 148-155m. Outcome may not accurately represent the noise experienced by local residents. Condition recommended to require evidence that chosen turbine does not materially affect noise assessment or that noise exposure is no greater than that predicted in the EIAR.
- Presentation of noise data is confusing. ETSU R-97 permits changes to the noise environment that are likely to lead to complaints and adverse health outcomes.
- The purpose of drafting new guidelines was due to perceived failings of the 2006 WEDG and ETSU R-97. It is reasonable to consider the draft guidelines in the EIAR.

- By adopting the ‘fixed limit’ proposed in the EIAR, changes in the night-time noise environment may be of a magnitude that is likely to cause disturbance and annoyance and interfere with sleep at some receptor locations.
- The future use of the site following the operational period should be conditioned.
- Cumulative night-time noise impacts should be considered, based on the specific turbines to be used.
- All mitigation and monitoring measures should be included as conditions.
- HSE Emergency Management has no specific observations to make (general recommendations set out in submission).

3.3.4. Irish Water (IW):

- No objection. Area is not serviced by IW and no impact on IW assets.

3.3.5. Transport Infrastructure Ireland (TII):

- TII will rely on the planning authority to abide by official policy in relation to development on/affecting national roads.
- Proposed development shall be undertaken in accordance with the recommendations of the Transport Assessment and Road Safety Audit submitted. Recommendations should be incorporated as conditions and any additional works required should be funded by the developer.

3.3.6. Geological Survey Ireland:

- No specific comment or observations.

3.4. Third Party Observations

3.4.1. The Planning Officer’s report states that 282 No. third party observations were made. The issues raised were generally the same as those raised in the third party appeals and/or the observations made on the appeals (see Section 6).

4.0 Planning History

4.1. Appeal Site

4.1.1. Reg. Ref. PL19/477:

4.1.2. Permission granted for the continued use of an existing lattice type meteorological mast, 80m in height and associated instruments to measure local climatic conditions.

4.1.3. ABP Ref. PL01.203283 (Reg. Ref. PL03/180):

4.1.4. Application for 10 No. wind turbines with capacity of 25MW, access tracks, a fenced electrical compound containing a single-storey control building and switch yard and an anemometer mast at Croaghaun Mountain.

4.1.5. Permission granted in 2003, following a third party appeal. Condition 2 required that 3 No. turbines be omitted, that hub height not exceed 60m and that overall height not exceed 87m. The permission was not implemented and has expired.

4.2. Surrounding Area

4.2.1. Greenoge Wind Farm:

- Reg. Ref. 15/87: Permission granted in 2015 for 1 No. wind turbine (hub height of up to 65m and rotor diameter of up to 55m).
- Reg. Ref. 11/280: Permission granted in 2012 for 1 No. additional turbine (80m hub height and 90m rotor diameter). This permission was implemented, following an extension of duration application.
- Reg. Ref. 08/527: Permission granted in 2008 for 2 No. additional turbines (80m hub height and 80m rotor diameter). This permission was not implemented and has expired.
- Reg. Ref. 99/851: Permission granted in 2000 for 4 No. wind turbines with total maximum height of 87m.

5.0 Policy Context

5.1. EU Legislation/Policy

5.1.1. Renewable Energy Directive 2018/2001/EU

5.1.2. The Directive sets out a new target for share of energy from renewable sources in the EU to at least 32% for 2030, with a review for increasing this target through legislation by 2023. A major shift within the revised Directive is the way in which Member States will contribute to the overall EU goal. Where previously (for 2020 target) member states had an individual national binding target, the 2030 framework is solely based on an EU-level binding target of 32%. It requires Member States to set national contributions to meet the binding target as part of their integrated national energy and climate plans.

5.1.3. Climate and Energy Policy Framework 2030

5.1.4. The Climate and Energy Policy Framework 2030 was adopted in 2014 and includes EU-wide targets and policy objectives for the period between 2021-2030. It seeks to drive continued progress towards a low-carbon economy and build a competitive and secure energy system that ensures affordable energy for all consumers and increase the security of supply of the EU's energy supply. It sets targets of at least 40% reduction in green-house gas emissions and at least 32% share of renewable energy from all energy consumed in the EU by 2030.

5.1.5. Effort Sharing Regulation (EU) 2018/842

5.1.6. The Effort Sharing Regulation (EU) 2018/842 lays down obligations on Member States with respect to minimum requirements to fulfil the EU's target of reducing its greenhouse gas emissions 30% below 2005 levels in 2030 in the various sectors and contributes to achieving the objectives of the Paris Agreement. A GHG reduction target of at least 30% applies to Ireland.

5.2. National Legislation/Policy

5.2.1. Climate Action Plan 2021

5.2.2. The Climate Action Plan 2021 (CAP) sets out a road map for taking decisive action to halve greenhouse gas emissions by 2030 and reach net zero emissions by 2050.

The plan emphasises the need to act now to build a cleaner greener economy and society. Among the most important measures in the plan is to increase the proportion of renewable electricity, up to 80% of all electricity generation by 2030. The Government seeks to annually update the new CAP and road map of actions to reflect developments of the previous year so as to ensure that required emission reductions are achieved.

5.2.3. In line with EU targets, the Programme for Government commits to achieving a 51% reduction in Ireland's overall greenhouse gas emissions by 2030. These legally binding objectives are set out in the Climate Action and Low Carbon Development (Amendment) Act 2021. This Act established legally binding frameworks and commitments to achieve targets.

5.2.4. Chapter 4 of the CAP, 'Choosing the Pathways which Create the Least Burden and Offer the Most Opportunity for Ireland', notes that, in terms of electricity generation, the proposed pathway includes a more rapid build out of renewable energy capacity (wind and solar power generation technology), increased storage and the deployment of zero emissions gas. The decarbonisation pathway for the electricity sector is seen as challenging given the rapid growth in demand for power as well as the need to ensure security of supply through the decarbonisation journey.

5.2.5. The CAP also seeks to provide carbon budgets and sectoral emissions ceilings with 3 five-year economy wide budget programmes setting a limit for the amount of greenhouse gas emissions that can be emitted for that period. Any failure to achieve targets will be rolled on and will be required to be achieved in addition to the new targets envisaged under the next five-year plan.

5.2.6. Chapter 11 of the CAP relates to electricity generation. It notes that electricity accounted for 16.2% of Ireland's greenhouse gases in 2018. However, the share of electricity from renewable energy increased almost five-fold between 2005 and 2018 from 7.2% to 33.7%. It is noted however that in achieving decarbonisation of the electricity sector this will not be possible without the social licence given by local communities making it vital that we bring them with the State on the energy transition. The plan notes that there is a requirement for a significant step up in ambition and delivery in order to meet the new 2030 target. A share of 80% of renewable electricity will require a significant contribution through local community-

based projects. At least 500MW of renewable energy will be delivered through such local community-based projects. Action No. 100 seeks to ensure a supportive spatial planning framework for onshore renewable electricity generation development.

5.2.7. National Energy and Climate Plan 2021 - 2030

5.2.8. The National Energy and Climate Plan (NECP) was prepared in accordance with Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action. The EU Governance Regulation is effectively the piece of EU legislation under which Ireland is held accountable in meeting its de-carbonisation targets.

5.2.9. The NECP set out specific annual targets for delivery of onshore and offshore wind in order to meet the requirements of Article 4 of the Regulation. The minimum target for onshore wind in Ireland by 2025 is a total installed capacity for 5900MW, an increase of approximately 1700MW on 2020.

5.2.10. Project Ireland 2040: National Planning Framework

5.2.11. The National Planning Framework (NPF) contains a number of relevant strategic outcomes and a number of national policy objectives which are relevant to the proposed development before the Board.

5.2.12. The NPF includes a set out 10 National Strategic Outcomes. The National Climate Policy Position establishes the national objective of achieving 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 onshore and offshore potential for energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand.

5.2.13. The transition to a low carbon and climate resilient society recognises that more diversified and renewables focussed energy systems will be necessary. It aims to deliver 40% of electricity needs from renewable sources by 2020 with further increases through to 2030 and beyond in accordance with EU/National Policy.

5.2.14. The NPF also notes that in addition to legally binding targets agreed at EU level, it is a national objective for Ireland to transition to be a competitive low carbon economy

by the year 2050. This will include an aggregate reduction in CO_2 emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation-built environment and transport sectors and, in parallel, an approach to carbon neutrality in agriculture and land use sector, including forestry which does not compromise capacity for sustainable food production.

5.2.15. The following National Policy Objectives (NPOs) are noted:

- **NPO 21:** Enhance the competitiveness of rural areas by supporting innovation in rural economic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT-based industries and those addressing climate change and sustainability.
- **NPO 54**: Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.
- **NPO 55:** 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.

5.3. Planning Guidelines

5.3.1. Wind Energy Development Guidelines for Planning Authorities 2006

5.3.2. These guidelines still constitute the official guidance on wind farms under the provisions of section 28 of the Planning and Development Act 2000, as amended.

5.3.3. The guidelines set out advice in relation to the design, siting, spatial extent, and height of turbines in various landscape character types. Guidance is also provided on matters such as noise, shadow flicker, natural heritage, archaeology, architectural heritage, ground conditions, aircraft safety, wind take and potential cumulative effects.

5.3.4. In terms of noise, a lower fixed rate limit of 45 dB(A) or a maximum increase at 5 dB(A) above background noise at nearby noise sensitive locations is considered to be appropriate to provide protection to wind energy neighbours. However, in very quiet areas the use of a margin of 5dB(A) above the background noise level at

nearby noise sensitive properties may unduly restrict wind energy developments which have wider national and global benefits. In low noise environments where the background noise is less than 30dB(A) it is recommended that the daytime level of $L_{A90\ 10\ mins}$ of the Wind Energy Development Noise be limited to an absolute level with the range of 35 to 40 dB(A).

5.3.5. The guidelines state that separate noise limits should apply for day-time and for night-time and that during the night the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. It states that a fixed limit of 43dB(A) will protect sleep inside properties during the night.

5.3.6. The guidelines state that noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500m.

5.3.7. In relation to shadow flicker, it is recommended that at neighbouring offices and dwellings within 500m shadow flicker should not exceed 30 hours per year or 30 minutes per day.

5.3.8. Draft Revised Wind Energy Development Guidelines 2019

5.3.9. The Board will note that these Guidelines are still in draft form and have not yet been adopted as Ministerial guidance under section 28 of the Act.

5.3.10. Section 3.1 of these draft Guidelines emphasise the need for development plans to incorporate a plan led approach to wind farms identifying areas which are considered to be suitable or not suitable for wind farm development. There is an emphasis on any development plan highlighting how it is proposed to contribute to overall national renewable targets.

5.3.11. Section 4.3.2 of the draft Guidelines emphasise the need for community involvement and the need to take community views into account when establishing, siting and designing wind farm developments. Section 4.9 of the draft Guidelines set out general separation distance to ensure the appropriate siting of wind farms.

5.3.12. Section 5.7 relates to noise. The draft Guidelines state that the preferred approach is to propose a relative rated noise limit of 5 dB(A) above existing background noise in the ranges of 35 to 43 dB(A) with 43 dB(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.

5.3.13. In terms of appropriate setback from boundaries, the draft Guidelines suggest that four times the tip height or at least 500m between the wind turbine and the nearest point of curtilage of any residential property in the vicinity is most appropriate for visual amenity purposes.

5.4. Regional Policy

5.4.1. Regional Spatial and Economic Strategy for the Southern Region

5.4.2. Chapter 5 of the Regional Spatial and Economic Strategy (RSES) states that the Regional Assembly is committed to implement regional policy consistent with the Climate Action Plan 2019. It goes on to state that the RSES recognises and supports the many opportunities for wind as a major source of renewable energy. Opportunities for both commercial and community wind energy projects should be harnessed, having regard to the requirements of DoHPLG Guidelines on Wind Energy. Wind Energy technology has an important role in delivering value and clean electricity for Ireland.

5.4.3. The following Regional Policy Objectives are noted:

- **RPO 87** Low Carbon Energy Future: The RSES is committed to the implementation of the Government's policy under Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019. It is an objective to promote change across business, public and residential sectors to achieve reduced GHG emissions in accordance with current and future national targets, improve energy efficiency and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture.
- **RPO 95** Sustainable Renewable Energy Generation: It is an objective to support implementation of the National Renewable Energy Action Plan (NREAP), and the Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the Region as a leader and innovator in sustainable renewable energy generation.

- **RPO 98** Regional Renewable Energy Strategy: It is an objective to support the development of a Regional Renewable Energy Strategy with relevant stakeholders.
- **RPO 99** Renewable Wind Energy: It is an objective to support the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines
- **RPO 219** New Energy Infrastructure: It is an objective to support the sustainable reinforcement and provision of new energy infrastructure by infrastructure providers (subject to appropriate environmental assessment and the planning process) to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely manner and that capacity is available at local and regional scale to meet future needs.
- **RPO 221** Renewable Energy Generation and Transmission Network:
    a. Local Authority City and County Development Plans shall support the sustainable development of renewable energy generation and demand centres such as data centres which can be serviced with a renewable energy source (subject to appropriate environmental assessment and the planning process) to spatially suitable locations to ensure efficient use of the existing transmission network;
    b. The RSES supports strengthened and sustainable local/community renewable energy networks, micro renewable generation, climate smart countryside projects and connections from such initiatives to the grid. The potential for sustainable local/community energy projects and micro generation to both mitigate climate change and to reduce fuel poverty is also supported;
    c. The RSES supports the Southern Region as a Carbon Neutral Energy Region.

5.5. Carlow County Development Plan 2022-2028

5.5.1. At the time of the lodgement of the planning application and the subsequent appeals, the Carlow County Development Plan 2015-2021 was in effect. However, the Carlow County Development Plan 2022-2028 has since been adopted and is now in effect.

5.5.2. The following Climate Action policies are noted:

- **CA P1:** Promote and support the implementation of European, national, regional, and local objectives for climate change adaptation and mitigation as detailed in the following documents and taking into account all other provisions of the Plan (including those relating to land-use planning, sustainable travel and transport, and flood risk management and drainage);
    - Climate Action Plan 2021;
    - National Adaptation Framework (NAF) – Planning for a Climate Resilient Ireland 2018;
    - Any new National Mitigation Plan adopted during the lifetime of this Development Plan;
    - Relevant provisions of any Sectoral Adaptation Plans prepared to comply with the requirements of the Climate Action and Low Carbon Development Act 2015, including those seeking to contribute towards the National Transition Objective, to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050;
    - Any Regional Decarbonisation Plan prepared on foot of commitments included in RPO 90 of the Regional Spatial and Economic Strategy (RSES) for the Southern Region;
    - Carlow County Council Climate Change Adaptation Strategy 2019-2024; and,
    - Carlow County Renewable Energy Strategy (Appendix VI).
- **CA P2:** Support the transition of the County to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, by way of

reducing greenhouse gases, increasing renewable energy, and improving energy efficiency.

5.5.3. The following Renewable Energy policies and objectives are noted:

- **RE P1:** Encourage and facilitate the production of energy from renewable sources, such as from wind, solar, bioenergy, hydroelectricity, and geothermal, subject to compliance with proper planning and environmental considerations.
- **RE P2:** Support the co-location of renewable energy technologies on a case-by-case basis subject to compliance with planning and environmental criteria.
- **RE O1:** Seek to achieve a minimum of 130MW of renewable electricity in the County by 2030, by enabling renewable energy developments, and through micro-generation including rooftop solar, wind, hydro-electric and bioenergy combined heat and power (CHP).

5.5.4. Section 7.10.3.1 of the Development Plan relates to Wind Energy. It states that the Council is required to achieve a reasonable balance between responding to overall positive Government policy on renewable energy and enabling the wind energy resources of the County area to be harnessed in a manner that is consistent with proper planning and sustainable development.

5.5.5. It is stated that the County Renewable Energy Strategy includes a calculation of the available wind resource having regard to the Draft Wind Energy Development Guidelines and its specific planning policy requirements and that no significant conflicts arise in relation to the wind strategy designations for neighbouring counties, of Laois, Kilkenny and Wexford.

5.5.6. It is stated that windfarm development in the more elevated Uplands Landscape Type, which is identified in the Landscape Character Areas as having the highest landscape sensitivity rating of 5, out of a rating scale of 1 to 5, will not normally be permissible.

5.5.7. The following Wind Energy policies and objectives are noted:

- **WE P1:** Have regard to the Department of the Environment, Heritage and Local Government's Guidelines for Planning Authorities on Wind Energy Development (or any update to this document).

- **WE P4:** Wind farm development will not normally be permissible in the Uplands Landscape Type as shown in Figure 6 of the Carlow County Landscape Character Assessment included as Appendix VII to this Plan. This provision shall not apply to micro energy generation and community energy projects as provided for in Section 7.10.3.5, where deemed appropriate and subject to compliance with proper planning and environmental considerations.
- **WE O1:** Increase the penetration of wind energy generation in County Carlow at appropriate locations and scale and subject to compliance with proper planning and environmental considerations.

5.5.8. With regard to Natural and Built Heritage, I note the following Policies:

- **NH P1:** Protect, manage and enhance the natural heritage, biodiversity, landscape and environment of County Carlow in recognition of its importance as a non-renewable resource, a unique identifier, and as a natural resource asset.
- **NH P2:** Ensure, as far as is practicable, that development does not adversely impact on wildlife habitats and species, and that biodiversity is conserved for the benefit of future generations in the interests of sustainability. This will include moving towards no net loss of biodiversity from plans adopted by and projects granted permission/authorised by the Council.
- **NH P3:** Support and co-operate with statutory authorities such as the National Parks and Wildlife Service (NPWS) and others on measures to manage designated nature conservation sites in order to achieve their conservation objectives. Specific regard shall be had to conservation objectives and conservation management plans where they exist for designated nature conservation sites.
- **NH P4:** Promote increased understanding and awareness of the natural heritage and biodiversity of the county.
- **NH P5:** Recognise that nature conservation is not just confined to designated sites and acknowledge the need to protect non-designated biodiversity, habitats and species not otherwise protected by legislation.

- **NH P6:** Protect and enhance the natural environment of County Carlow and recognise the important role of the natural heritage through its diversity, quality and integrity, in terms of enhancing the image of the County and contributing to quality of life, economic growth, tourism and recreation.
- **NH P9:** To promote the carrying out of ecological/habitat assessments to inform the layout and design of development proposals and ensure they integrate the protection and enhancement of biodiversity and landscape features wherever possible, by minimising adverse impacts on existing habitats (whether designated or not) and by including mitigation and/or compensation measures, as appropriate.

5.5.9. Landscape is addressed in Chapter 9 of the Development Plan. The appeal site is located within the Blackstairs and Mount Leinster Uplands Landscape Character Area, which is described as follows:

> "The Mount Leinster/ Blackstairs Landscape Character Area is situated on the eastern side of the County along the border with County Wexford. It is dominated by the uplands of the Blackstairs Mountains and Mount Leinster, which extend as a distinct ridgeline for c. 25km northwards from the border with Wexford. Mount Leinster is largely located in Wexford; however, the western slopes are in County Carlow. The slopes of the mountain descend westwards on to an undulating landscape, which converges with the landscape of the Central Lowlands landscape character area.
>
> In terms of natural attributes and scenery, this character area is the most important in the County and is as such highly sensitive to change. This particularly applies to the uplands/mountains whereas the farmed ridges and rolling rough grazing types would be moderately sensitive.
>
> The Blackstairs and Mount Leinster Uplands contains the following Landscape Types: uplands/mountains, rolling rough grazing, farmed ridges, narrow river valley."

5.5.10. Tables 9.1 and 9.2 of the Development Plan indicate that the Uplands are the most sensitive landscape type with a 'Low' capacity for wind farming.

5.5.11. With regard to scenic views and routes, these are set out in Tables 9.3 and 9.4 and illustrated in Maps 9.4 and 9.5 of the Plan.

5.5.12. I note the following Policies and Objectives relating to landscape:

- **LA P1:** Protect and maintain the overall integrity of the County's landscape, by recognising its capacity to sustainably integrate and absorb appropriate development, and by ensuring that development protects, retains and, where necessary, enhances the appearance and character of the landscape, and does not unduly damage or detract from those features which contribute to its value, character, distinctiveness and sensitivity e.g. landform, habitats, scenic quality, settlement pattern, historic heritage, amenity, land use and tranquillity.
- **LA P2:** Ensure that development will not have a disproportionate landscape or visual impact in sensitive upland areas of the County (due to siting, layout, design or excessive scale, height and bulk) and will not significantly interfere with or detract from scenic upland vistas, when viewed from the surrounding environment, including nearby areas, scenic views and routes, and from settlements.
- **LA P3:** Adopt a presumption against developments which are located on elevated or visually exposed sites or areas with open exposed vistas, and where the landscape cannot accommodate such development with appropriate mitigation
- **LA P4:** Ensure that developments on steep slopes or ridges will not be conspicuous or have disproportionate landscape or visual impacts when viewed from the surrounding environment, including from nearby areas, scenic views and routes, and from settlements.
- **LA P6:** Require all developments, having regard to their landscape setting, to be appropriate in siting, layout, design and scale, in order to ensure any potential adverse or landscape and visual impacts are minimised and/or removed where necessary, and that natural site features and characteristics are retained and maintained.
- **LA P7:** Facilitate, where appropriate, developments that have a functional and locational requirement to be situated on steep or elevated sites (e.g. reservoir,

telecommunication masts or wind energy structures) where residual adverse visual impacts are minimised or mitigated.

- **LA P9:** Have regard to the potential for screening vegetation when evaluating proposals for development within the uplands.
- **LA P11:** Protect and preserve the established appearance and aesthetic attributes of views and prospects that contribute to the inherent quality of the County's landscape, including views, prospects and scenic routes listed in Tables 9.3 and 9.4, and particularly views to and from mountains, hills, river valleys and river corridors, and views of historical or cultural value (including buildings and townscapes) and views of natural beauty.
- **LA O1**: Ensure that the management and assessment of development throughout the County takes account of the recommendations and assigned Landscape Character Areas, Landscape Types, and Landscape Sensitivity, and the Schedule of Views, Prospects and Scenic Routes, as contained in this Plan, and in accordance with Government Guidance on Landscape Character Assessment and the National Landscape Strategy.
- **LA O2:** Ensure landscape/visual impact assessment will be a key consideration in the assessment of development proposals within the County.

5.5.13. With regard to Tourism and Recreation, I note the following Policies and Objectives:

- **HT P11:** Maximise, enhance and support opportunities for the use of the County's uplands and waterways, including the Blackstairs Mountains, the River Barrow and the River Slaney, as tourism and recreational amenities, and engage with relevant agencies, bodies, and key stakeholders in this regard, including Fáilte Ireland, Waterways Ireland, National Parks and Wildlife Service, and local communities, to develop the infrastructure, quality and amenity of these natural assets.
- **R P1:** Promote the value of the County's outdoor recreational and amenity resources as key assets for the local economy and for the health and well-being of communities and continue to support the expansion of existing amenities.

- **R P4:** Develop, in conjunction with local communities, short walking routes, such as looped walks, heritage trails and Slí Na Sláinte routes.
- **R P5:** Facilitate, where appropriate, the provision of walking and cycling trails in the County, in co-operation with relevant agencies and bodies, including Coillte, Waterways Ireland, Inland Fisheries Ireland, Government Departments, and other Local Authorities.
- **R P7:** Support the maintenance of existing off-road walking and cycling trails and the development of new such trails in the County and ensure that the development of new trails does not negatively impact on any European or nationally protected sites.
- **R P8:** Support and promote public access to the County's high amenity, scenic and recreational lands, including upland areas, waterways, and other natural amenities, which does not endanger the conservation of such natural amenities.
- **R P12:** Support the development and promotion of the Turas Columbanus as part of the Columban Way Walk, including appropriately designed and located signage, and in collaboration with adjoining local authorities and key stakeholders as appropriate.
- **R O1:** Support the implementation of County Carlow's Outdoor Recreation Strategy 2020-2023 and the Healthy Carlow County Plan 2018-2021, and any updated versions of these documents, as a means of promoting the development of outdoor recreational facilities and infrastructure in the County and increasing access to and participation in recreation and physical activity.

5.5.14. Chapter 16, Development Management Standards, states that proposals for energy development will be considered in the context of current Government policy on the subject but will take into account other, often competing Council policies on land usage relating to sectors such as agriculture, tourism and outdoor recreational activities, the protection of sensitive landscapes, sensitive ecological sites, and any relevant guidelines issued from time to time by the Department of Housing, Local Government and Heritage. It states that proposals should demonstrate that human health has been considered, including those relating to the topics of noise, shadow

flicker, ground conditions/geology (including landslide and slope stability risk assessment), air quality and water quality.

5.5.15. With regard to wind energy, the following Development Management Standards are set out:

> "The Council acknowledges the role of wind energy as a renewable energy resource. Chapter 10 Climate Action and Energy and Appendix VI Renewable Energy Strategy detail policies and objectives for this sector over the period of this Plan. When assessing planning applications for wind energy developments the Council will have regard to the Wind Energy Development Guidelines for Planning Authorities, DoEHLG, (2006) and any amendments to the Guidelines which may be made and the Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change (2017). Applications shall be accompanied by all relevant environmental assessments including impact on collision risk species (birds and bats). Applications will also be required to ensure that development is in accordance with the guidance provided in Chapter 9 Landscape and Green Infrastructure and Appendix VII Landscape Character Areas with regard to compatibility between the land use and the principal Landscape Character Areas of the County and the proximity to Landscape Sensitivity Factors."

5.5.16. Carlow County Renewable Energy Strategy

5.5.17. The Carlow County Renewable Energy Strategy is included as Appendix 6 of the Development Plan. The stated vision for renewable energy is "to encourage and support the transition of Carlow to a sustainable county through community engagement, energy efficiency and the sustainable development of renewable energy, whilst providing environmental and economic benefit at a local and national level in accordance with all relevant planning and environmental considerations".

5.5.18. The Strategy notes that there is currently an installed capacity of c. 5.8 MW of onshore wind power in the county and states that the level of wind energy penetration in County Carlow is relatively low, representing less than 0.1% of the installed national capacity.

5.5.19. Figure 6.4 of the Strategy comprises a Wind Opportunities and Constraints Map. The appeal site is located within an area identified as having viable wind speeds and

within one of two 'available areas > 5km^2' in the county. These are areas that are stated to take into account the spatial requirements for large wind farm development and environmental, heritage and amenity constraints and separation distances from housing.

5.5.20. Section 6.1.5.2 of the RES refers to the LCA for Carlow and the Uplands' Landscape Type, where the elevated terrain is more visually sensitive and has the highest landscape sensitivity rating of 5, out of a rating scale of 1 to 5. Therefore, windfarm development in the more elevated 'Uplands' Landscape Type is designated 'not normally be permissible'.

5.5.21. The land use policy is considered alongside the wind resource opportunities and constraints in Figure 6-4 of the RES, and the RES states that:

> "In the south-eastern area of the county, close to the border with County Wexford and County Wicklow, where the wind speeds are favourable and where constraints mapping suggests that adequate separation distances to dwellings would be available – see area in blue on Figure 6-3. The landscape type is 'Uplands', therefore potential for new wind farms is affected by the land use policy, which identifies that wind farms are not normally permissible in the 'Uplands' Landscape Type of the Mount Leinster – Blackstairs Mountains LCA."

5.5.22. The RES includes the following Objective and Policies relating to wind energy:

- **Objective W1:** Increase the penetration of wind energy generation in County Carlow at appropriate location and scale.
- **Policy W1.1:** Proposals for wind farm developments will be determined in accordance with National Wind Energy Development Guidelines and County Development Plan policy framework.
- **Policy W1.2:** Support the re-powering of existing wind farms when they come to the end of their operational life, and extensions to existing wind farms, subject to assessment on a case-by-case basis.
- **Policy W1.3:** Support community led wind energy developments or developments with innovative models for community ownership.

5.5.23. With reference to National targets for renewable electricity, the RES sets a county target to achieve up to 130MW capacity, including enabling more wind farm development up to 30MW installed capacity. This includes 6MW of new wind farms.

5.5.24. Carlow County Landscape Character Assessment

5.5.25. The Carlow County Landscape Character Assessment (LCA) is included as Appendix 7 of the Development Plan. I note that it is dated 2015 and it appears to be the same LCA as the previous Plan, albeit with an Addendum containing 'combined and consolidated tables and maps for the Schedule of Views and Prospects and the Schedule of Scenic Routes'.

5.5.26. The site is located within the Mount Leinster / Blackstairs Uplands Landscape Character Area. The LCA states that "in terms of natural attributes and scenery, this character area is the most important in the County and is as such highly sensitive to change. This particularly applies to the uplands/ mountains whereas the farmed ridges and rolling rough grazing types would be moderately sensitive". The Landscape Sensitivity Map provided in Figure 4 of the LCA identifies this Uplands area as being of sensitivity level 5 which is the most sensitive rating.

5.5.27. It goes on to state that "there is low capacity to absorb wind turbines, overhead cables and masts, particularly in the upland areas where they would detract from the scenery and visitors' experience of 'wilderness'". This is reflected in the land use capacity matrix contained in the LCA, where the Mount Leinster / Blackstairs Uplands are stated to have Low capacity for wind farming.

5.5.28. The 'Strategic Policy' section of the LCA contains a number of sectoral recommendations. In relation to 'infrastructure and industry' it states that:

> "In general, wind turbines should be sited away from higher scenic or otherwise valued landscapes, and positioned where their impacts will be considered acceptable. Criteria for the development of wind energy are subject to a separate study".

5.5.29. There are a number of designated Scenic Views and Prospects and Scenic Routes in the vicinity of the appeal site or in the direction of the site, as set out in the LCA.

6.0 The Appeals

6.1. Grounds of First Party Appeal

6.1.1. A first party appeal against the Planning Authority's decision to refuse permission was submitted on behalf of Coillte CGA by Fehily Timoney & Company. The appeal can be summarised as follows:

- There is an overarching requirement for each County to facilitate renewable energy development, including onshore wind energy, in order to meet Climate Action Plan targets and the Climate Action and Low Carbon Amendment Bill.
- Wind Energy Strategy for Carlow identifies limited areas which are considered suitable for wind energy with the subject site location being one of those areas. If the proposed development does not proceed, Carlow County Council would be significantly deficient in their contribution to onshore renewable energy targets.
- Proposed development does not adversely interfere with the landscape character and would not contravene the County Carlow Landscape Character Assessment and Schedule of Protected Views.
- No evidence of Annex I habitat on the site and adequate survey information is available in the EIAR and NIS to determine the baseline for impacts on birds and bats and conclude that the proposed development will not adversely impact on bat populations protected under the Habitats Directive and the Merlin and other bird species protected under the Birds Directive.
- Traffic and Transportation report did not recommend refusal but sought clarification on elements of the transportation routes and recommended pre-construction survey.
- Use of local roads as haul routes will not create a traffic hazard or have a significant impact on the local road network. Significant precedent nationwide for the use of similar local roads for renewable energy developments.
- The Board is asked to have regard to the overarching policy requirement to facilitate onshore wind energy development. There is significant national,

regional and local climate, planning and energy policy support for the development.

- The principle of the proposed development was not considered to materially contravene the Development Plan with regard to the Wind Energy Strategy. The Planner's Report was positive with regard to wind energy policy.
- Given the low deployment of wind energy in Carlow to date (0.2% of national wind energy fleet), the transmission system has good capacity to accommodate additional wind generation.
- Carlow falls well below other Counties in designating land as suitable for wind energy development.
- Precedent for wind energy development in the area. There are 5 No. wind turbines adjacent to the site at Greenoge. Permission was also granted by the Board for a 7 No. turbine development on the subject site in 2003.
- The Board's approach in Moanvane Wind Farm (ABP Ref. PL19.301619) and Pinewood Wind Farm (ABP Ref. PL11.248518) is noted. In those cases, national need was balanced against local impacts.
- **Refusal Reason 1**
    - Detailed rebuttal to refusal reason No. 1 has been prepared by MacroWorks (Appendix 2 of appeal).
    - The CAAS report prepared for the Planning Authority cannot be relied upon as it was not supported by a site visit and was not undertaken in accordance with, or is contrary to, the relevant LVIA guidance and WEDG.
    - CAAS report is factually incorrect with regard to two of the designated views deemed to be 'very significantly' impacted, which will actually have no potential visibility of the proposed development. Two other views are 13.5km and 17km away and will only have a minute view of blade tips. Inconsistencies in report with 'very significantly' affected views elsewhere identified as 'insignificant', 'slight' or 'moderate'.
    - CAAS Report refers to Greenoge Wind Farm as permitted rather than existing, which has a major bearing on the receiving landscape.

- Despite the clear shortcomings, the Planning Authority translated the findings of the report into their refusal reason 1. If this approach to LVIA was universally applied, there would be no wind farm in the country that does not give rise to a host of 'very significant' visual impacts.

- **Refusal Reason 2**
  - Appendix 3 of the appeal responds to the DAU submission and other biodiversity issues raised in the Planner's Report.
  - Potential Loss of Annex I Habitat:
  - Planning Authority relies on the submission of the DAU which claimed that two areas of the site have been mapped as Annex I habitat 'European dry heaths (4030)'. The DAU appear to rely on a 2015 survey of the areas prepared for the Blackstairs Farming Group.
  - DAU submission focuses on two areas of the site identified as 'Area A' and Area B' (see Figure 1 of appeal). There is no evidence of Annex I Dry Heath type within the development footprint and the 2015 survey, contrary to the DAU's assertion, identifies only 'Area B' as Annex I Dry Heath, not 'Area A'. 'Area B' is outside the wind farm site boundary.
  - Surveys undertaken by applicant's ecologists in June and July 2019 and again in September 2020 confirms that 'Area A' and 'Area B' do not conform to Annex I Dry Heath Habitat.
  - Section 8.3.5.1 of the EIAR states that the dry heath habitats in areas A and B do not conform to Annex I Dry Heath (4030) type and are instead Dry Siliceous Heath HH1 habitat.
  - Both areas lack the key indicator species associated with the Annex I Dry Heaths (4030) habitat type and every single relevé failed the criteria outlined in Perrin et al. (2014) for an assessment of 'good conservation status' for Annex I Dry Heaths (4030; based on vegetation composition, vegetation structure and physical structure).
  - The DAU submission made comments relating to the finding of Erica cinerea, Erica tetralix and Molina caerulea within 'Area A' and 'Area B' and suggest that this is representative of wet heath or bog species. However it

is highly unlikely that the habitat is pure Wet Heath HH3 type, as no Trichophorum caespitosum and Juncus squarrosus were recorded during relevé surveys (key Wet Heath HH3 species).

- Heath habitats within the study area were mapped based on the dominant habitat type present at the location, namely Dry Siliceous Heath HH1. The species composition for both Areas A and B were similar and the classification of Area B as Dry Siliceous Heath HH1 matches the habitat classification in the 2015 report cited by the DAU.
- It is acknowledged that the habitat type does form a mosaic to a lesser degree with Wet Heath habitat however the dominant habitat type remains Dry Siliceous Heath HH1.
- To alleviate any concerns that the habitat represents Annex I Habitat, FTC has repeated the assessment for Wet Heath under the criteria outlined in Perrin et al. (2014) for Annex I habitat 'North Atlantic wet heaths with Erica tetralix (4010)'. The assessment showed that every single relevé failed the criteria for an assessment of 'good conservation status' for Annex I Wet Heaths (4010; based on vegetation composition, vegetation structure and physical structure). Almost every relevé contained too great a coverage of Agrostis capillaris and lacked the requisite moss coverage to be of Annex I type. Across both sites A and B the conservation status was 'Unfavourable bad (>25% of stops failed)'.
- The 2015 survey referenced in the submission shows only 'Area B' as having been mapped as Annex I Dry Heath habitat. 'Area A' (the location of turbine T6) was not classified as Annex I Dry Heath (4030) habitat, which corresponds with the results of the FTC field surveys. 'Area B' is outside the footprint of the wind farm and according to more recent FTC field assessments, did not contain sufficient indicator species to warrant an Annex I 'Dry Heath' classification or an Annex I 'northern Atlantic wet heaths' classification.
- Therefore, there is no Annex I Dry Heath habitat within the development boundary of the proposed wind farm.

- Clearly, ‘Area B’ was once classified as Annex I Dry Heath habitat and it is possible that, since the assessment was made in the 2015 report, the conservation status of the dry heath in that area has since declined, due to pressures such as burning, which are known to occur in the area. The assessment of ‘Area B’ as Dry Siliceous Heath HH1 reflects the classification by Tubridy et al.
- As the Dry Siliceous Heath HH1 habitat recorded within the wind farm development footprint does not correspond to any Annex I habitat type, it also currently has no legal designation. There is also no mechanism or legally binding obligation for the landowner to improve this habitat and it is not located within a European site. There is also ongoing burning, scrub encroachment and surrounding drainage associated with forestry activities in the area. Therefore, the “do-nothing scenario” would mean that the heath remains as lower value and will not naturally revert to good quality without management.
- Potential Impacts on Bats
- Planner’s report suggests that the wind farm may possibly cause injury or death to a few individual specimens of Leisler’ s bat as it is a high flying species (10m to 70m+) and that the amount of time for such bats to be hunting at upper height limit cannot be assessed accurately due to maximum distance by ultrasound detectors. The planner’s report suggests that the operational phase bat risk is unclear and should be amended and clarified.
- Leisler’s bats have a loud, lower frequency call, with frequencies ranging from 24.7 to 31.4 kHZ9. Lower frequencies carry further, as they are less likely to be absorbed by physical barriers, such as vegetation. Therefore, despite the high-flying nature of Leisler’s bats, static detectors give a representative picture of their activity at the site, even at the upper height limit. The original assessment of the operational and residual impact on bat populations made in the EIAR is based upon best and established proven methodologies.

- The extensive bat surveys carried out (activity, static detector, and roost surveys) for the site were for a larger 9 turbine wind farm layout. Therefore, the baseline area covered by bat surveys is larger than the minimum standard required for a wind farm and the results presented give a robust picture of bat activity at the proposed development.
- The conclusion in the EIAR is made considering the comprehensive mitigation measure proposed during the operational phase of the development. These measures have centred around curtailment, cut-in speeds and feathering and were carefully designed to provide further certainty that the resultant impact of the wind farm will be a slight to imperceptible residual negative reversible residual impact and in the local context.
- Planner's Report requested further details on the derivation of the conclusion regarding pre-mitigation impacts.
- The overall potential impact level across Leisler's bat, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle is low for T1, moderate for T2 and T3 and moderate-high for turbines T4-T7. As 4 of the 7 turbines are predicted to have a moderate-high impact on bats, the overall assessment is of a Long-term Significant Impact on a Local Level and Reversible.
- The bat surveys carried out are robust and provide a baseline of information which is in accordance with best practice, in particular the SNH 2019 Guidelines. The efficacy of these measures is discussed in the EIAR and the feathering of turbine blades combined with increased cut-in speeds have been shown to reduce bat fatalities from 30% to 90%.
- The EIAR conclusions with regard to residual impacts are accurate and based on a suite of mitigation measures which are robust and proven to reduce potential impact.
- <u>Potential Impact on Merlin</u>
- Merlin are not breeding within the site or within the conservative 500m buffer.

- The copulating Merlin observed on the 17th April 2019 was located outside the flight activity zone for the proposed wind farm.
- It is likely that if the pair were nesting nearby the nest location would have been further to the south of the proposed wind farm site.
- The assertion that Merlin have been under recorded is unfounded. Merlin were only recorded on four occasions over three full summer /breeding seasons of ornithological surveys all of which were outside the wind farm site. Three years of dedicated Merlin surveys were also undertaken.
- To address DAU concerns it is proposed to add Merlin to the list of bird species included in the pre-construction survey. Should any new nests be recorded, works at these locations will be restricted to outside the breeding season or until chicks are deemed to have fledged. Post-construction monitoring programme is also proposed over a number of years.
- The proposed development will have Slight-Imperceptible Reversible Residual Impacts, in the local context on Merlin.
- <u>Potential Impact on Migratory Bird Species</u>
- The bird surveys undertaken are adequate for assessing the potential effects on general bird migration and passage migrants, having adhered to SNH guidelines.
- The DAU suggestion for nocturnal surveys is extremely excessive. The proposed wind farm is located inland in a land locked county with no SPAs within 20km of the proposed development. Nocturnal surveys for migrating birds are not standard for onshore wind farms.
- Vantage point survey effort was greater than that required by SNH guidance and would have detected any diurnal flights from migratory species during the peak migration periods. A proportion of surveys were carried out at dawn or dusk and so a proportion of species that migrate at night still would have been recorded. The impact assessment has not underestimated any potential effects on migratory birds.
- Extensive hinterland surveys were also carried out to identify any nearby areas that might be important for wintering or breeding target species.

especially waterbirds, waders and raptors. No large passage migrants such as swans or geese were recorded.

- Habitats surrounding wind farm are generally not suitable for passage migrants, such as swans and geese. The nearest I-WeBS site is the Slaney Upper (c.3 km to the east). Species recorded here include goosander, Mediterranean gull, black-headed gull, common gull, herring gull, yellow-legged gull and glaucous gull. Apart from Kilgarvan quarry there are no further I-WeBs site within 15km of the proposed wind farm.
- Wexford Harbour and Slobs SPA is the closest SPA (22.3 km southeast) and is designated for Berwick's Swan, Whooper Swan and Greenland white-fronted goose. None of these species have been recorded during the bird surveys.
- Berwick's swans migrate from Ireland to Siberia via Denmark, Poland and Finland and are unlikely to fly from any of the nearby SPAs over the proposed wind farm, as their migration route takes them east over the Irish sea.
- Very few Whooper Swans have been recorded in Carlow in recent years and the site is outside the core range of birds wintering at Wexford Slobs (less than 5km).
- Studies have found low levels of collision mortality for wintering swans and they have been shown to exhibit horizontal avoidance as they fly past the outer edge of wind farms.
- Best scientific knowledge suggests comparable if not higher avoidance rates by wildfowl during perceived periods of poor visibility. The presence of aviation lighting is considered unlikely to affect this and may render turbines more visible.
- The majority of Greenland white-fronted geese in Ireland winter at Wexford slobs. The direct flight to Iceland has been observed to be the most commonly used route with the species climbing to altitudes in excess of 3,000 metres and covering the distance between Iceland and Ireland in under 17 hours.

- SNH guidance recommends an avoidance rate of 99.8% when conducting collision risk modelling for geese and states that “geese do not collide with wind farms in numbers that are of conservation concern”.
- Bulgarian wind farm research found that the species of geese present appear to have a near perfect ability to avoid collision with rotating turbine blades.
- No disturbance to wintering Greenland White-fronted Geese during the operational period is expected. The subject site does not constitute a constrained feeding area and is outside the core range of birds wintering at Wexford Slobs. If a widely-used migration route for these species exists over the proposed wind farm, ornithology surveyors would have detected these species during the course of three years of continuous surveys.
- Any potential collision risk at nighttime will be reduced due to aviation lighting mitigation measures.
- There is sufficient information available to conclude that the proposed development is unlikely to have an adverse impact on Migratory birds which are protected under the EU Birds Directive.

- **Refusal Reason 3**
  - To address the Planning Authority’s concerns that haul routes to the west are unsuitable, the applicant commits to facilitating all HGV traffic from the east, via the N80 and L2026 Barker’s Road.
  - A field survey has identified 24 No. potential locations along the L2026 where sufficient space exists to facilitate the safe passing of a car and a HGV at a minimum. Additional road width measurements have been taken.
  - While there will be some temporary inconvenience to local road users, the proposed development will not endanger public safety by reason of traffic hazard.
  - Turbine deliveries will not be abnormal weight loads. They are abnormal in dimensions only. All vehicles used will be subject to standard axle weight requirements.

- Route Survey Report and associated swept path analysis submitted with the EIAR verifies that the road is suitable to accommodate turbine component deliveries. Temporary accommodation works between Bunclody and the site are confined to two locations along the L2026 Barker's Road and the proposed temporary turning point to the west of the site entrance.
- The L2026 Barkers Road has been used previously to facilitate the construction of the existing Greenoge wind farm. The required accommodation works are in line with those carried out to facilitate the construction of Greenoge wind farm despite the smaller turbine components associated with that project, as technological advancements in the form of blade lifting trailers has reduced the overall swept path for larger turbine components.
- Delivery of turbine components is a specialist transport operation with the transport components often carried out during off-peak or night periods in consultation with the Roads Authorities and An Garda Síochána Traffic Corp with special permits generally required. It will not endanger public safety by reason of a traffic hazard.
- The L2026 local road is accustomed to HGV traffic associated with existing forestry and agricultural activities.
- The 24 No. potential passing locations include existing passing bays, locations where the paved surface widens sufficiently at a junction or field entrance, or where the width of the road was measured at 5m or greater. Road widths were recorded at 60 locations, with the existing carriageway widths ranging from 3m to 6.5m. The average distance between passing opportunities is 297m, ranging from 75m to 1000m along a very straight section of the road where forward visibility is at its greatest and average carriageway width is 5m.
- Where the surface width is 5m or greater, two cars or a car and HGV can safely pass each other and where the surface width exceeds 6m, two tipper truck HGV's (the most common HGV load associated with the construction of the wind farm) can pass each other safely. In places, the

length of passing locations will not facilitate the passing of two long loads such as articulated lorries however, it is considered that this scenario would be a rare occurrence and can be mitigated adequately through avoidance by adequate timing of such deliveries to site under the TMP.

- To address two HGV's meeting head on, personnel with radio communications will be positioned at strategic locations along the L2026 to ensure no disruption or hazard is created. 'Flagmen' shall be coordinated by and report to the Traffic Management Coordinator who shall be responsible for all HGV movements.
- Passing points have been located to avoid interaction with existing roadside drainage.
- The number of tipper trucks leaving the site and moving along the L2026 can be monitored during the construction phase. It is estimated that trucks will take approximately 8 mins to travel from the site entrance to the N80 and staging times will be implemented with the aim of limiting the number of tipper trucks on the L2026 at any one time. The implementation of this mitigation measure during the construction phase will be undertaken in consultation with Carlow County Council and will be included as a requirement of the TMP.
- Pre-condition survey will be carried out on all public roads that will be used in connection with the development to record the condition of the public roads in advance of construction commencing. A post-construction survey will also be carried out after the works are completed. The specification and timing of the surveys will be agreed with the roads authority.
- All roads will be reinstated expeditiously on completion of the construction works to their pre-works condition or better and to the satisfaction of the roads authority.
- Carrying out road condition surveys immediately prior to commencement of development is appropriate as it could be several years before any works commence on the proposed site and carrying out such a survey now would be premature.

- Planning Authorities usually address the final condition of the roads post construction by planning conditions and bonds. Standard approach utilised elsewhere across the country by both Planning Authorities and An Bord Pleanála.
- Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road, including a road sweeper if necessary.
- The transport of materials onto the site will give rise to increased traffic and associated impacts. However, these impacts will be temporary.
- Construction period of 12 - 18 months is expected. Worst case 12-month programme assumed in the EIAR results in an increase of 42 HGV trips per day, increasing to 57 HGV trips per day during peak construction. These figures represent HGV traffic associated with the entire project passing along a single road which is unrealistic. Excluding the grid connection works which takes place separately, average HGV trips reduce to 21 trips per day, increasing to 32 during peak construction.
- Over a typical 10 hour day this equates to just 4 no. HGV trips per hour on average. This is considered low and will not generate a significant volume of additional traffic on the existing local road network.
- The traffic impact assessment assumed all HGV traffic travelling on each of the approach roads. This was a worst case scenario but demonstrated that all HGV traffic can be adequately facilitated from the East via the N80 and L2026 Barker's Road without any increased adverse impact on that local road network.
- An alternative to the haul routes for the two quarries identified in the EIAR is available via Regional Roads, the M9 and the N80 to Bunclody before turning onto Barker's Road (see Figure 12 of appeal). These haul routes would minimise the use of the immediate local road network and eliminate use of the local roads which approach the site entrance from the west.
- Bedrock for construction of the onsite access roads and hardstands will be sourced from the site borrow pit with only surface course stone imported from local quarries.

- Existing forestry roads will be used to form the internal wind farm access tracks, significantly reducing the requirement for the importation of road construction materials.
- The key mitigation against the endangerment of public safety is an adequately designed TMP. The contractor will finalise the TMP, obtain necessary consents and liaise with the Local Authorities regarding their requirements. A dedicated Traffic Management Co-ordinator will be appointed to ensure its implementation.
- In addition to the measures contained in the EIAR and TMP, the applicant now proposes:
  - HGV traffic will be facilitated from the east only via the N80 and L2026 Barker's Road.
  - Clear signage will be placed at strategic locations along the L2026 in locations where forward visibility is limited, in agreement with the Council.
  - In addition to the identified passing opportunities, it is proposed to place flagmen with radio communications at strategic locations on the L2026 to ensure no hazard or disruption is caused where two HGVs meet.
  - The number of tipper trucks leaving the site will be staggered to limit the number of trucks on the L2026 at any one time.
- Temporary construction activities to facilitate a renewable energy project should not be considered contrary to proper planning and sustainable development. This is contrary to national climate policy.
- It is not unusual for wind farm developments to utilise narrow local country roads for construction access and for such impacts to be considered temporary and not significant. The Board is referred to precedent cases where potential construction impacts on roads were addressed by way of conditions requiring bonds, surveys, reinstatement etc. (PL23.239594, ABP-306500-20, ABP-301619-18) rather than refusal.

6.1.2. The appeal was accompanied by a number of appendices, including a response by MacroWorks to refusal reason No. 1, a response to the DAU submissions, further ornithological survey results, and a photographic road survey. A series of maps and drawings were also submitted, including haul routes, passing opportunities, viewsheds and bird survey information.

6.2. Grounds of Third Party Appeals

6.2.1. **Save Mount Leinster (c/o Noonan Linehan Carroll Coffey LLP)**

6.2.2. This appeal includes a legal submission by Noonan Linehan Carroll Coffey solicitors, a main appeal document, which repeats and expands upon many of the issues raised in the legal submission, and various appendices and enclosures. It can be summarised as follows:

- Appellant supports the Planning Authority's reasons for refusal but believes that there are more extensive grounds for refusal that the Board is asked to adopt.
- Areas identified as 'preferred' and 'open for consideration' under the Carlow Wind Energy Strategy 2008 were chosen without the application of a sectoral specific SEA. There is no evidence that AA Screening was undertaken for the Strategy prior to the designation of areas of the various SACs as 'open for consideration'.
- Public consultation did not meet objective standards and breaches EIA Directive and Aarhus Convention.
- Historical evidence of slope failures adjacent to the site were not acknowledged or included as part of the slope stability assessment.
- Failure to adequately address the cumulative impact of the development on the Slaney River Valley SAC (000781), River Barrow and River Nore SAC (002162) and the Blackstairs SAC (000770).
- Failure to assess the impact on human health in terms of indirect impacts of noise and local water supplies including the Burren Water Treatment System.
- Proposed development is in breach of the Environmental Noise Directive.

- Proposed development breaches the European Landscape Convention 2004.
- The applicant relies on a 2007 study to claim that amplitude modulation is only found in the vicinity of a minority of installations. This study is outdated and contradicted by more recent Australian research (copy of scientific paper included with appeal).
- The Board, relying on similar assurances as seen in the EIAR, has granted permission for wind farms which had such severe noise impacts when operational that nearby residents had to abandon their homes. The Board was only listening to one side of the argument. Refer to judgment in Balz and Heubach v An Bord Pleanála [2019] IESC 90.
- The Board cannot satisfy itself under the EIA Directive that there has been a proper description, analysis and conclusion with regard to noise impact. By failing to provide an EIAR that contains certain content the application is invalid and the Board has no jurisdiction to consider it.
- The noise assessment is based on ETSU-R-97 and the 2006 Wind Energy Guidelines which are outdated and not fit for purpose. The Supreme Court, in the Balz case, condemned the Board's reliance on the 2006 guidelines. A critique of ETSU-R-97, prepared by Dick Bowdler, is included with the appeal.
- The Board's obligations as a competent authority under the Habitats Directive, as described by the CJEU in case C-258/11 cannot be met in this case due to deficiencies, omissions, and lacunae in the application. This deprives the Board of jurisdiction to grant the application.
- CJEU judgment in Case C-24/19 concluded that in cases where an SEA is required but is not carried out, the plan or programme, as well as permissions for projects based on same, must be annulled.
- The National Renewable Energy Action Plan and the 2006 WEDG, which both constitute a "plan or programme" were adopted without carrying out SEA. The Board is bound by the CJEU judgment in C-24/19.
- The Board is asked to inform itself of more recent research in the field of noise. Three relevant reports are included with the appeal that demonstrate

why the traditional approach is no longer effective and provide findings on the scale of the amplitude modulation problem.

- The noise chapter is so deficient that it doesn't meet the mandatory requirements of the Regulations and does not enable the Board to complete an assessment to the standard required.
- Lack of clarity regarding turbine type and dimensions. Noise data for different types of turbines presented in EIAR is for less powerful turbines. The greater the power output, the longer the blade length and the greater the noise energy.
- The Board is being asked to adjudicate on an application where there is an incomplete, selective and inadequate estimate of noise impacts complying only with outdated 2006 WEDG.
- The Board has not reflected on the Balz judgment. It says it is implementing national policy to promote wind energy, but that policy is not to promote wind energy regardless of normal planning considerations.
- Numerous court cases where wind turbine noise led to people suffering unlawful interference and harm.
- WHO Environmental Noise Guidelines for the European Region 2018 recognise that standard noise measurement methods may not be adequate to protect human health and gives recommendation in respect of noise conditions for wind turbines.
- Blackstairs Uplands extend across south Carlow and North Wexford. The SEA of the current Wexford County Development Plan recognises that the Blackstairs Uplands has reached capacity in terms of ability to absorb any further wind energy development because of "significant environmental, heritage and landscape constraints". Previously permitted wind energy developments were refused extension of duration permission on the grounds that any further such development on the environmentally sensitive uplands would be contrary to proper planning and sustainable development.
- Failure to assess the impact on rural regeneration and social deprivation within receiving communities.

- Inadequate public consultation. A petition gathered 3,050 signatories and there were 293 submissions lodged with Carlow County Council. Breach of the Aarhus Convention. Population affected is greater than acknowledged in the EIAR.
- Inadequate EIAR scoping and exclusion of non-governmental stakeholders.
- Inadequate consideration of site selection and alternatives.
- EIAR does not adequately deal with the fact that many of the wind farms in the area were granted permission without assessment in accordance with Article 6(3) of the Habitats Directive. It also does not reference application PL26.301989 for substitute consent for the grid connection for four of these developments. Definitive findings with regard to cumulative impacts cannot be established beyond reasonable doubt.
- Wind development is not required at this location with reference to existing renewables in the area and the potential for offshore wind.
- 'Do nothing' alternative would be best alternative as there is both a biodiversity and climate crisis. Bog restoration and tree planting would enable the area to function as a carbon sink while conserving biodiversity.
- Previous grant of permission in 2003 was for wind turbines half the size and pre-dated the SEA Directive. Proposed development would materially contravene the objective of the Development Plan to protect, manage and enhance the natural heritage, biodiversity, landscape and environment of the County.
- Proposed development would be an undesirable precedent for further industrialisation of the area.
- 60% of the area of the site is not in an area 'open for consideration' for wind energy development. 5 of the 7 turbines would be outside the 'open for consideration' area.
- Impacts on tourism, recreation and amenity. Irish Tourism Industry Confederation report from 2014 noted Scottish survey that presence of wind farms was making some areas less attractive for walking and climbing tourists.

- Shadow flicker impacts. Draft WEDG 2019 requires zero shadow flicker. Residents are impacted by Greenoge wind farm shadow flicker. Shadow flicker can occur at distances greater than 10 x rotor diameter due to greater elevation of turbines.
- Noise impacts: inadequate background noise study and inadequate noise assessment. 2006 WEDG noise limits cannot be relied upon as no SEA of the WEDG was undertaken.
- It is unclear how the Draft WEDG 2019 could be complied with. Application is premature pending adoption of the revised WEDG.
- Indirect health impacts associated with noise. The Board is referred to the opinion of Deputy Chief Medical Officer as part of the WEDG targeted review.
- Fire risk from turbines.
- HGV traffic numbers understated. Impact on character of the Mount Leinster Heritage Drive. Impact of road closures on tourism and local residents.
- L2026 is not suitable to support the HGV movements required.
- Potential material arising from borrow pit overestimated in EIAR. Significantly more HGV traffic movements will be required (appellant estimates 35,065 compared to 13,046 in EIAR).
- Earthworks requirements understated. Construction will have greater impacts than stated.
- Lack of third party consent for temporary road works. Unclear what will happen if a replacement turbine or blade is required, since roadworks are temporary.
- Proximity of Turbine T5 to the L2026. Potential distraction, ice throw, flicker and noise.
- Impact on adjacent SAC habitats and ecological continuum.
- Impact on Annex I bird species including Merlin, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Peregrine Falcon. Impacts on red and amber-listed bird species.

- Article 4(4) of Habitats Directive requires Member States to take appropriate steps to avoid deterioration of habitats including those suitable for the conservation of wild birds.
- Failure to recognise habitat value for Merlin and failure to utilise appropriate surveying methodology.
- Board cannot be satisfied beyond reasonable scientific doubt that the proposed development will not adversely affect Greenland White-fronted Goose.
- Inadequate bird surveying and failure to comply with SNH guidance. Impact of tree felling on survey results.
- Impact on Annex I European Dry Heath Habitat (4030). Habitat should be restored in line with EU Action Plan.
- Impacts on hedgerows and protected flora.
- Management of invasive species and potential for impacts on the SACs.
- Impact on bats. Key-holing of turbines within woodland can result in additional impacts and EIAs have been found to be poor predictors of subsequent bat fatality rates.
- Failure to conduct automated bat surveys in newly cleared areas and failure to conduct above-canopy automatic static surveys. Low reliability of potential roost feature surveys.
- Impacts on mammals and inadequate mammal surveys. Doubt about effectiveness of mitigation measures for otter. Impacts on red squirrel, pine marten and badger.
- Cumulative impact with current application for substitute consent relating to the grid connection for four wind farms in the area (Ref. PL26.301989).
- Failure to fully assess slope stability. EIAR states that there is no evidence of slope instability or historical landslides, however there have been landslides on the Coillte lands. Site visit by appellant's engineer identified slope failures.
- Slope stability impacts due to low frequency vibrations. Risk of liquefaction.

- Large hardstanding/impermeable areas will result in large volumes of water run-off with the potential for catastrophic landslide events. Runoff volumes underestimated.
- Failure to address the impact of channelled surface and ground water from the drainage of the development at 40 No. outfall points onto slopes at 'high' or 'moderately high' landslide susceptibility.
- No evidence that hydrology will not be significantly impacted. Implications for SACs and local homeowners. Run-off and flooding not adequately assessed. IFI had concerns regarding the proposed borrow pit and hydrological impacts.
- Acidification of watercourses due to conifer tree felling and the release of pine needles. Potential pyrite reaction with limestone to produce sulphites.
- Impacts on protected species including Freshwater Pearl Mussel, Salmon and Lamprey.
- Impacts on public wells and the Burren Water Treatment Plant.
- Inadequate archaeological assessment of the site, cable route and turbine delivery route. Impact on unrecorded features/sites.
- Impact on landscape setting of architectural monuments, including Church of Christ the Redeemer Myshall, Huntington Castle and Altamount House.
- Cultural heritage impacts on the receiving settlement communities, including Myshall village and its relationship with Croaghaun Mountain.
- Impact on site passed through by Richard II in 1399 on his raids on the Kavanagh Kings. This historical site should be left intact. Opinion of Prof. Kevin Wheeler of Notre Dame Global Gateway included with appeal.
- Transboundary effects on Wexford.
- Area is designated as Level 5 Landscape Sensitivity under the LCA. "It is the most important area in the County for scenery and wilderness" with low capacity for wind turbines. Wexford and Kilkenny Development Plans both state that no further wind farms will be developed in the Blackstairs Uplands area.
- Contrary to Heritage policies.

- Development will have wider landscape and visual impact than that identified in the reason for refusal and on wider population.
- Impact on amenity users, local artists, mountaineers, cyclists etc.
- Lack of detail on forestry felling and final landscaping proposals.
- Lack of information on turbine and foundation design details. Design is "preliminary".
- The 7 No. turbines contravene planning regulations, EIA Directive and Habitats Directive:
    - **T1:** Outside "open for consideration" area; Proximity to Turas Columbanus Trail; Fails to meet 50m buffer zone for watercourses.
    - **T2:** Outside "open for consideration" area; Impinges on area used for hang gliding/paragliding.
    - **T3:** Outside "open for consideration" area; Proximity to Mount Leinster Heritage Drive; Visual impact on residents; Impinges on area used for hang gliding/paragliding.
    - **T4:** Outside "open for consideration" area; Cumulative impact with Greenoge wind farm on Cranemore residents; Drainage onto slope with historical slope instability.
    - **T5:** Outside "open for consideration" area; Proximity to Mount Leinster Heritage Drive; Impact on third party agricultural lands without consent; Impinges on area used for hang gliding/paragliding.
    - **T6:** Located on Annex 1 habitat; Dispute over land ownership and consent; Wind take from Greenoge wind farm; Cumulative impact with Greenoge on Cranemore residents; Drainage onto slope with historical slope instability.
    - **T7:** Visual impact on Mount Leinster Heritage Drive.

6.2.3. **Martina Kinsella**

- The Board is asked to uphold the Planning Authority's decision and expand the reasons for refusal with particular reference to the existing impact on

homeowners due to the operational Greenoge Wind Farm and the cumulative impact of the proposed development.

- Post-construction of the Greenoge Wind Farm in 2004, the appellant began experiencing severe flooding at her premises which had never occurred previously. House, slurry tank and agricultural buildings were all badly affected. Photographs submitted with appeal. Appellant has spent large sums of money on remedial works including drains and walls.
- Following erection of an additional turbine, further issues arose including springs emerging in the appellant's only remaining dry shed and in her sitting room.
- It is contended that the disturbance of underground springs, the destruction of underground water routes, increased run-off and the introduction of large amounts of impermeable concrete together with drainage works and discharge to the green field sites was responsible for the flooding issues.
- Cumulative impact with the proposed wind farm. Drainage proposals may address issues on-site but has the potential to cause devastating impacts to surrounding homes and landowners.
- Runoff estimations seems dramatically understated and the mitigation measures will simply push the problem further down the mountain.
- Tampering with an already vulnerable site and groundwater supply that is classified as 'at risk' has the potential to catastrophically alter the hydrology of the area and destabilise it further. Private wells and water courses may dry up or become contaminated.
- Slope instability and landslide occurrences. Landslides have occurred on a number of occasions since construction of the Greenoge wind farm, most recently in 2021, within c. 1.2km of proposed turbine T6.
- Landslides have occurred on a number of other wind farm sites around the country. A survey in 2016 found that Freshwater pearl mussel was present in the Slaney River. This species is at risk from the proposed development.
- Shadow flicker impacts. Cumulative impact of both wind farms.

- Inadequate consultation. Appellant advised applicant's representatives that turbines T4 and T6 were a huge threat as they had the potential to aggravate flooding previously experienced. No changes were subsequently made.
- Appellant experiences vibration impacts from existing Greenoge wind farm and cumulative impact with proposed development.
- Impact on property and land values.
- Interference and loss of signal to mobile phones, television and internet.
- Impacts on human health due to headaches, dizziness, heart palpitations, sinus problems, tinnitus, joint pains and dementia. Impacts due to vibroacoustic disease (VAD).
- Newspaper article stated that three children were awarded a financial settlement in 2020 when they and their parents had to leave their house because they suffered various illnesses following the installation of a wind farm in Co. Cork.
- Studies show that habitat loss and fragmentation are the greatest impacts of wind farms on wildlife, but equally noise pollution is threatening more than 100 species including amphibians, birds, fish, arthropods, molluscs and reptiles.
- Cuckoos have moved away since the existing wind farm was built. Cumulative effect of more turbines will drive Cuckoos out altogether and eliminate other bird species found locally, including Buzzards, Merlin, Hen Harrier, Red Kite and Peregrine Falcon.
- Collision deaths in birds, bats and insects are commonplace around wind farms.
- Impacts of low frequency noise on animals.
- While the Planning Authority did refuse permission on the basis of impacts to Annex I habitat and Annex IV species, they didn't highlight the myriad of other species vulnerable to impacts.

6.2.4. The appeal was accompanied by copies of correspondence sent by the appellant to Carlow County Council over a number of years regarding the contended impacts of

the Greenoge Wind Farm as outlined above and by photographs of flooding, land slippage and the remedial works referenced in the appeal.

6.2.5. **Irish Hang Gliding and Paragliding Association (IHPA)**

- Croaghaun Mountain has been in continuous use by free flyers since the 1970s and is used for national competitions.
- Free flyers partake in two different types of flight at Croaghaun Mountain: ridge soaring and thermal flying. The proposed wind farm will have different impacts on each.
- Croaghaun is unique for its ease of access from the car park to the take-off locations and it can be flown in the prevailing wind direction. It forms an integral part of the Mount Leinster complex of free flying sites and is a recreational amenity and tourist attraction.
- Turbine T3 has the greatest potential impact on free flying. Depending on flying conditions and type of flying, there could be situations where turbines T2 and T5 also impact on safety.
- IHPA suggested to Coillte that T3 be shut down for a maximum of 250 hours per annum and that T2 and T5 be shut down for a maximum of 50 hours per annum. Shutdowns would be at low wind speeds and would have minimal impact on financial viability of the wind farm. Similar shutdowns occur in Northern Ireland and the UK.
- IHPA review of track logs from websites used by pilots indicates that 91.5% of all flights logged from Croaghaun Mountain would have been impacted by the wind farm when ridge soaring, with the issue being T3. 30% of the flights would have been further impacted as they flew through the site as they would have come within 180m of a turbine.
- The other turbines (T1, T4, T6 and T7) are unlikely to have as much of an impact on ridge soaring and cross-country flights due to distance.
- Existing Greenoge Wind Farm does not cause an issue for free flying due to distance.

- EIAR is insufficient and inaccurate. Consultation with IHPA has been poor, with information not provided and no definitive effort to discuss a shutdown agreement until the planning application was made. IHPA has sought to discuss their concerns with Coillte since 2018.
- IHPA recommended that an Aviation Impact Assessment be completed. This was not done.
- IHPA reject the assessment that the proposed development will have a long-term positive impact on recreation, amenity and tourism. There are already extensive trails in the area and paragliding and hang gliding are probably the main outdoor recreation activity that occurs at Croaghaun Mountain.
- EIAR does not state how the "potential for a moderate negative impact on hang gliding and paragliding activities" has been calculated or explain what a moderate negative impact is.
- It is incorrect for the EIAR to state that the area is not designated for such activities. The Aviation Map of Ireland published by the Irish Aviation Authority marks the Mount Leinster area as an area used by hang gliders and paragliders.
- Other sites cannot be used in the same weather conditions or offer the same ease of access.
- Safety impacts and hazards of people still using Croaghaun Mountain for free flying has not been assessed in the Human Health section of the EIAR.
- Chapter 16 of the EIAR does not assess the impacts on these forms of aviation. As a location used for the take-off and landing of free flyers, Croaghaun Mountain is by definition an 'aerodrome' as defined in SI No. 355/2008 Irish Aviation Authority (Aerodromes and Visual Ground Aids) Order 2008. UK Civil Aviation Authority guidance should have been used as a basis for assessment.
- Coillte should use their wind data from their met mast to establish the maximum number of hours per annum that Croaghaun Mountain could be used for free flying.

- Development is not in accordance with Development Plan and County Carlow Outdoor Recreation Strategic Plan, which seek to promote niche tourism and recreation.
- If further information is sought, an Aviation Impact Assessment should be completed with a focus on the impact on free flying.
- If permission is granted, mitigation could be implemented with a condition requiring the shutdown of turbines T2, T3 and T5 for limited periods per annum.

6.2.6. **Nearest Neighbours Group (c/o Patrick McLean)**

- Refusal reasons were not sufficient to deal with the full impact of the proposed development.
- Community engagement was inadequate and in breach of the Aarhus Convention.
- Croghaun aquifer supplies all the nearest neighbours water supplies and cannot be put at risk. Water streams rising in Bealalaw flow in two different directions, one is the source of the Douglas River and two other streams flow into the Burren River. This information is not included in the EIAR.
- If no official body can guarantee that the water supplies will not be contaminated by shale dust due to turbine vibration, then disturbance of the water table should be added to the refusal reasons.
- No survey undertaken to ascertain impacts on wells and water supplies of the nearest neighbours group.
- Red line boundary falls outside the 'open for consideration' area and should be reduced to encompass Turbine T3 and the existing met mast only. Concern that this would leave the door open for future expansion.
- Vibration impacts are not quantified or surveyed. Recent study by the British Wind Energy Association states that wind turbines generate low frequency vibrations. No analysis of the impact of such vibrations on the local aquifer.
- Data from studies of wind farms on shale rock in Canada found they produce vibrating waves that cause fine particles of clay-based shale to contaminate

water wells. These particles are so fine that they cannot be removed by filtration equipment. Development Plan seeks to avoid damage to the hydrogeological and ecological function of the soil resource.

- Impact on public health due to noise pollution, low frequency noise, vibration, shadow flicker, flooding, mudslides.
- Does proposal conform to WHO policy regarding noise, sleep impacts, environmental health and health policy?
- Is removal of 24.4ha of forest and removal of 1200m^3 of soil and rock in keeping with strategic objectives B1, B2, B3 and S1 of Development Plan?
- Proposed development is in breach of the European Landscape Convention.
- Impacts on birds. Applicant states that observation viewing points were not ideal as they were confined to Coillte lands and public roads. This qualification is important as it means that it cannot be regarded as definitive. Nearest neighbours do not accept some of the presented bird data. They have seen sparrow hawk, kestrel, buzzard, black gull, woodock and snipe on their lands. No mention of wild pheasant. Flight paths do not appear credible from their viewing points.
- Impacts on bats. Bat survey did not include Myshall village where is a significant bat population as per a village survey carried out in 2019. Data submitted by applicant relates to collision fatalities for bats, but recent work observed that fatalities may be due to barotrauma, i.e. injuries resulting from sudden changes in air pressure. Larger rotor blade sizes increases mortality rate.
- Environmental impacts associated with movement of rock and soil and concrete for turbine bases.
- Borrow pit is inappropriate and is a serious risk to the aquifer. Environmental issues associated with proposed pond and volume of run-off during flash floods.
- Proximity to SACs.

- Applicant soil and rock assessment is questioned. Appellants have bored 40m deep boreholes without meeting limestone bedrock. Most of the Blackstairs Mountain range consists of shale rock. SAC description does not mention limestone.
- It is stated that there are no slope stability issues, however there have been two substantial peat slides in the area in 2004 and 2008. Photographs submitted with appeal.
- Cumulative impact of additional wind turbines in the area and the height is much greater than existing wind farms.
- Application is incomplete due to lack of specification of wind turbines.

6.2.7. **Sarah Durdin Robertson (c/o Peter Sweetman)**

- Applicant has used the wrong test in their Appropriate Assessment Screening Report. The correct test is to be found in Kelly v An Bord Pleanála [2014] IEHC 400 at paragraph 26, which approvingly quotes Advocate General Sharpston in paragraphs 47-49 of her Opinion in CJEU Case C-258/11.
- As the screening is fundamentally flawed it is not possible to make a finding which would comply with paragraph 44 from CJEU 248/11[1].

> "So far as concerns the assessment carried out under Article 6(3) of the Habitats Directive, it should be pointed out that it cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned (see, to this effect, Case C-404/09 Commission v Spain, paragraph 100 and the case-law cited). It is for the national court to establish whether the assessment of the implications for the site meets these requirements."

[1] This reference appears to be a typographical error, with Mr Sweetman instead quoting paragraph 44 of the judgment in CJEU case C-258/11.

6.3. Planning Authority Response

6.3.1. The Planning Authority made a submission responding to the first party grounds of appeal. It can be summarised as follows:

- Reason 1 (Visual Impact):
  - Proposed development is located in the Mount Leinster and Blackstairs Uplands LCA. This is the most important LCA in the County, is highly sensitive to change and has low capacity to absorb wind turbines.
  - PA engaged an external consultant (CAAS) at planning application stage to assist in the visual impact assessment of the proposed development. The PA agrees with the findings of the CAAS report that the LVIA contained in the EIAR understates the significance of effects across a number of viewpoints.
  - The proposed development would have an adverse visual impact on the Mount Leinster and Blackstairs Uplands LCA, with very significant landscape and visual impacts on numerous designated scenic routes (10, 11, 12 and 16) and protected views (1, 4, 24, 29, 30, 35, 36, 38, 39, 41 and 42).
  - The proposed development would have a very significant landscape and visual impact in the most important and scenic LCA in the County which has a low capacity to absorb further wind farm development, notwithstanding the applicant's assertion of a precedent set for such development relating to existing and previously permitted wind energy developments in the area of a noted lesser scale.
- Reason 2 (Biodiversity/habitats):
  - The PA, noting the response from the Dept. of Tourism, Culture, Arts, Gaeltacht, Sport and Media, is not satisfied based on the information submitted with the application that the applicant has demonstrated that the proposed development will not impact on an area of Annex 1 habitat (European Dry Heath) which is protected under the Habitats Directive. The application documents did not satisfactorily demonstrate that the proposed development will not adversely impact on bat populations protected under

the Habitats Directive and the Merin bird species and other migratory birds protected under the Birds Directive.

- The PA remains of the view that additional studies would be required in order to address the concerns expressed in the Department's referral submission. Given the concerns regarding landscape and visual impacts, as per Reason 1, the PA did not request further information on this issue.

- Reason 3 (Traffic):
  - The applicant now proposes to alter the HGV construction traffic route to come from the east (N80 and L2026 Barker's Road) rather than local roads to the west.
  - The appeal references 24 locations where cars and HGVs may pass along the 7.4km access route but are not specific as to locations where HGVs and other HGVs may pass.
  - There are very limited areas where two HGVs could pass and specific lay bys will be required to be constructed. There is a lack of detailed assessment for the proposal for flag men at strategic locations on the 7.4km route. A traffic management plan could be considered providing the lay bys are constructed to facilitate passing. Existing driveways and field gates are not considered adequate to allow two HGVs to pass.
  - Concerns regarding the capacity of the L2026 to sustain the wheel loads from 6000+ HGV trips during the construction phase and the road will require significant reconstruction costs in the order of €400,000.
  - Concerns regarding the impact on roadside drainage. Collapse of road drainage will lead to accelerated deterioration of the road surface over the winter period. New drainage arrangement will be required.
  - The 8 minute travel time for HGVs from the access route to the site is considered very optimistic considering the uphill gradient and road geometry. No reference is made to concrete truck movements and the need for large volumes of concrete in confined periods.

- The local road is used to access forestry during the harvest season, which is occasional, and the frequency of movements would be minimal and not comparable to the 25 HGVs per day stated in the EIAR.
- Turbine delivery route does not make reference to impacts on third party property regarding improvement works to facilitate the proposed development. Appeal documents do not address the impact on third party property and/or how consents are to be obtained.
- Uncertainty regarding the borrow pit details, the exact quantity of materials to be obtained on-site and how this may impact on the findings of the Traffic Impact Assessment with regard to HGV movements.
- Lack of information regarding the grid connection route and the impacts on roads and haul roads servicing the cable route. Impacts during construction would be significant on residents and road users. Road opening licences would be required, with the PA seeking to recover supervisory costs.
- The PA remains of the view that the proposed development is likely to have quite a significant effect on the local road network and road users. Given the fundamental reason to refuse permission based on Reason 1, the PA did not request further information.

6.3.2. The Planning Authority submission concludes that their position remains as per the Planning Report recommendations.

6.3.3. The PA submission also included email correspondence from the Transportation Department and Environment Department, summarised as follows:

- The Environment Department state that the environmental (i.e. biodiversity) issues would require specialist ecological input which is not available in the Section and that it is not possible to comment further. They state that the Department is not opposed to the project in principle and supports opportunities for renewable energy, noting that they had recommended a request for further information when the application was referred to them.
- The issues raised by the Transportation Department are as per the main PA submission above.

6.4. Observations

6.4.1. A total of 141 No. observations were received (see Appendix A). The issues raised were generally as per the third party appeals, however the following additional issues were raised:

- Application and assessment must take into account the 2021 change in BirdWatch Ireland's assessment of bird species, a number of which were amber listed but whose conservation status has worsened.
- Article 4(4) of the Birds Directive must be taken into account considering the Annex I and Red and Amber listed species. Refer to CJEU case C-418/04 Commission v. Ireland, which found that Ireland had failed to transpose and apply fully and correctly the second sentence of Article 4(4).
- It is not acceptable that the Annex I species Merlin and Peregrine Falcon were screened out of the assessment in the AA. The conclusion that there is no evidence of breeding Merlin is an error.
- BirdWatch Ireland is concerned with risks to Kestrel (Red listed) present at the site. Research has found it is sensitive to collision with turbines. Further assessment and Kestrel breeding survey required.
- EIAR conclusions on Merlin are not appropriate or conclusive. Once breeding Merlin were identified on site, a full breeding Merlin survey should have been completed in accordance with SNH guidance. This requires a two-year survey within a 2km radius of breeding and roost sites.
- The applicant's argument that the plant composition is too altered by fire and other pressures to be considered a 'favourable' example of Annex I habitat is not an argument that it is not Annex I habitat. It must be assumed that the habitats have the potential to be European Dry Heath or have the potential to be of high biodiversity value.
- The status of the Merlin and heath/peatland habitat cannot be seen in isolation. These areas should be valued as a buffer zone for the SAC.
- Annex I Dry Heath habitat is one of the two most threatened habitats in the EU. The Commission published an Action Plan for its restoration and

conservation in 2020. The goals of Article 10 of the Habitats Directive match those of the Action Plan with regard to ecological coherence.

- Site is a migration corridor for birds of conservation concern, including White-fronted Geese and Whooper Swans.
- Impacts on Hen Harrier due to collision risk, displacement or loss of foraging habitats.
- Impact on freshwater pearl mussel, salmon and lamprey due to hydrological connection to SACs.
- Inadequate bat surveys and potential roost feature survey. Above-canopy bat monitoring for Leisler's bat should have been undertaken as recommended by SNH and EUROBAT guidance. Research and guidance shows that siting of turbines within woodland (key-holing) can attract greater bat activity and act as a trap.
- Impacts on insects and associated impacts on high-flying bats such as Leisler's bats. EIAR statement that monitoring will be undertaken where the 50m buffer distance cannot be allowed for is in breach of SNH guidance.
- Use of outdated data in bat assessment. The claim that losses will be reversible is unfounded and quoted studies are based on much smaller turbines with smaller swept areas.
- Cumulative impacts not assessed in accordance with SNH guidelines.
- Impacts on Red Grouse.
- Carlow is Ireland's second smallest county and is not comparable to Cork. The two main areas of scenic beauty in the county are Mount Leinster and the River Barrow.
- Impacts on tourism, agri-tourism enterprises and Mount Leinster Heritage Drive.
- Impact on walking routes, including the new Columbanus route from Mount Leinster to Italy, Hidden Sky Road, South Leinster Way which has received funding to link to the Wicklow Way.

- Proposed amenity walking trails will be unappealing and not comparable to those in other Coillte sites. The lack of car parking proposed bears testimony to their lack of appeal and amenity value.
- Placing industrial installations on the boundary of SACs is not only in contravention of the Habitats Directive but is also ecologically incoherent. It treats natural features as a line on a map and ignores the dynamism that is inherent in natural systems.
- Numerous observers note that the first party appeal identifies entrance to their property as a pull-in area to be used as a passing opportunity by HGVs. This was done without consent of the observers and no consent will be given should the development proceed.
- Impact on property values.
- Impacts on private wells and local water supplies, including Burren Water Treatment Plant.
- Impact on pedestrians, school children and cyclists.
- Impact on Corrubut Gap and Scenic Route 10.
- Turbine T6 is 50m within an Annex I habitat. It is not within Coillte's remit to declassify an area of its Annex I status.
- Significant under-estimation of construction phase HGV traffic and failure to consider traffic associated with tree felling and removal.
- Chapter 7 of the EIAR shows an observer's land included inside the site boundary without his consent (John Foley).
- Health and safety implications of turbines, which will be some of the largest in the country.
- Developer is proposing considerable works on the turbine delivery route, including road widening, temporary roads, removal of hedgerows etc. They have failed to get necessary consents from the landowners. No information on how maintenance, such as replacement of a blade, will be achieved without affecting public and private property again.

- Lack of a road safety audit. Damage to roads. Inadequate surface and construction of L2026 to accommodate heavy HGV traffic.
- Lack of detail and information regarding excavation depths, borrow pit etc. No details of removal of surpluses off site, so locations will have to be found on site which will affect local topography.
- Bedrock is shale, which is excluded from re-use by TII specifications and is not a suitable fill material. Alternative is to import vast quantities of suitable material on the local road network with traffic impacts.
- Presence of pyrite in samples together with high water table result in likelihood of pyritic heave unless major preventative steps are taken.
- The application states that the crushed rock potential across the site is classified as very low to low. The intention to use a borrow pit is disingenuous. Scale of borrow pit, allowance for side slopes and overburden removal will lead to landscape impacts and pumping and discharge of water is not adequately mitigated.
- Earthworks strategy understates the level of construction. Traffic volumes are underestimated due to need for substantial volume of imported fill and removal of waste.
- Applicant is relying on precedent of 2003 permission. However the Board reduced the number of turbines and the tip height to a maximum of 87m, to lessen the visual impact. It is impossible to contemplate how 178m high turbines will have less of an impact than the max. 87m turbines previously permitted by the Board.
- It is widely recognised that increasing wind speeds give rise to higher noise levels. This is completely overlooked.
- Applicant has not addressed effects of shadow flicker on humans, such as drivers and operators of agricultural machinery, and animals within the radius of influence.
- Applicant is relying on 2006 WEDG in relation to shadow flicker of up to 30 hours per year. In pre-planning, they were advised to have regard to the Draft WEDG which set out a zero shadow flicker policy.

- Hydrological impacts of large extent of tree felling which exceeds the 20 Ha limit per wind farm for consistency with sustainable forest management. There is no guarantee that a tree felling licence will be forthcoming.
- There should be a setback requirement from a site boundary given the scale of the turbines.
- Development would set a precedent for further wind energy developments in the area.
- Applicant incorrectly states that development is Strategic Infrastructure Development.
- Carlow is working towards meeting Climate Action Plan targets through sources other than wind, such as solar energy.
- Article 4(4) of the Habitats Directive requires appropriate steps to avoid deterioration of habitats not only in protected areas but also in areas which are suitable for the conservation of wild birds.
- IFI stressed that no soil erosion occur on site rather than reliance on mitigation measures to prevent sedimentation and siltation of salmonid spawning sites and impact on freshwater pearl mussel and river lamprey. This is not possible given the extent of excavation. IFI also raised concerns about the use of borrow pits.
- Lack of a noise contour map, which was referenced but not provided.
- Accuracy of both background noise levels and average wind speeds is questionable.
- Ordnance Survey maps indicate two forts within the site boundary which the EIAR failed to identify.
- Removal of stone walls and hedgerows will destroy character.
- Wind farms will be developed off shore in the future and that is more suitable for this scale of turbine.
- Coillte is not permitted to become involved in wind energy and it was ultra vires to make the planning application. The Board should disallow the appeal which would enable another public undertaking to exceed its statutory powers.

- NREAP does not override the National Biodiversity Action Plan.

6.5. Prescribed Bodies

6.5.1. The Development Applications Unit, the Department of Agriculture and the Irish Aviation Authority were invited by the Board to make a submission or observation in response to the first party appeal.

6.5.2. No responses were received from either Department, while the IAA submission may be summarised as follows:

- IAA Air Navigation Services Division does not get involved in the planning process.
- IAA ANSD is to be notified in advance of the erection of any manmade objects, as specified in their submission.

6.6. Further Responses

6.6.1. First Party Response to Third Party Appeals

6.6.2. Fehily Timoney, acting on behalf of the applicant, made two submissions responding to the third party appeals. The first responded to the appeal made by the Irish Hang Gliding and Paragliding Association and the second responded to the other 4 No. third party appeals. The responses may be summarised as follows:

- **Impact on use of Croaghaun Mountain for free flying**
  - Site is not designated for free flying.
  - Free flying activity should not be considered an established use in a planning context given the location of the take-off area within an SAC which would require planning permission. Such use of the take-off area could be considered a material change of use from the established agricultural use.
  - There is no record of any planning permission for the take-off activity at the western car park.
  - Planning Officer's report was positive with regard to policy support for the proposed development.

- Precedent of the Board granting permission for 7 No. turbines on the site in 2003 is noted.

- **Incomplete and insufficient EIAR**
  - Chapter 5 of the EIAR clearly sets out and documents the consultation carried out with IHPA.
  - Effects on hang gliding/paragliding were classified as 'Moderate' in accordance with EPA guidance. Aviation specialist report included with appeal response indicates that IHPA is significantly overstating the impact of the proposed development in contradiction to their site guide. Analysis shows that the site is suitable for just 10% of the time, with further reductions due to precipitation, visibility and daylight hours. Other sites in the Mount Leinster area are available for a wider range of wind directions.
  - EIAR represents worst case scenario. Flying can still take place from the westerly car park with a minor reduction in the number of flights.
  - Area is not identified on any land use mapping for Carlow and reference to paragliding/hang gliding is only referenced in the Carlow Outdoor Recreation Strategy.
  - Area is not designated for hang gliding/paragliding by the IAA. The IAA defines an area, which includes Croaghaun, as a hang gliding/paragliding site but this is to warn pilots flying in this area to look out for hang gliders and paragliders, not to advise hang gliders/paragliders where they should be flying.
  - Chapter 11 of the EIAR assumes the worst case scenario, that no flying will take place from Croaghaun Mountain as a result of the wind farm. The responsibility for ensuring the safety of pilots lies with the pilot. Pilots will fly or will be able to fly more than 250m clear of all turbines. The legally required separation distance from obstacles is 150m and the responsibility for health and safety lies with the pilot.
  - Chapter 16 of the EIAR considered the impact on aerodromes and regulated aviation. Chapter 11 considered the impact on hang gliding/paragliding as they are recreational activities.

- As confirmed by Aviation expert, the area is not an aerodrome as claimed by IHPA.

- **Insufficient and inadequate consultation with IHPA**
  - Extensive consultation with IHPA during design and pre-application stages. Coillte remains open to further engagement with IHPA and to exploring all options to minimise impacts on flying activities, including enhanced access to alternate take-off points, if permission is granted.

- **Compliance with County Development Plan and County Carlow Outdoor Recreational Strategic Plan**
  - Development Plan does not make reference to paragliding or hang gliding and there are no objectives to maintain same from a land use perspective.
  - Section 11.15.5 of the Development Plan, which is referenced by the appellant, primarily relates to tourism accommodation and is not relevant to free-flying activities.
  - Section 8.11.2 includes a policy that outdoor recreation activities should not result in damage to sites of nature conservation importance. The take-off area is within an SAC and has not been subject to a planning assessment or determination.
  - Proposed wind farm seeks to comply with Policy Objective 6 by facilitating the upgrade of existing tracks for recreational use.
  - Carlow Outdoor Recreation Strategy is not referenced in the Development Plan. It is recognised that the Strategy supports paragliding/hang gliding, but it also supports walking and hiking trails. The proposed development will not prevent the objectives of the Strategy from being achieved, as only 1 of 4 take-off locations in the Blackstairs Mountains area will be impacted.

- **Proposed IHPA Mitigation**
  - Moving turbine T3 by 500m is not possible due to turbine spacing requirements and impact on wind take of other turbines.
  - It would not be possible to put such a protocol in place due to Grid Code compliance (which dictates how and when a wind farm can turn on/off and

be operated) and the ability to secure appropriate insurance cover to enable investment in the project.

- **Appropriate Assessment Screening**
  - Mr Sweetman's submission is not entirely clear. The AA Screening Report and NIS quote paragraphs 47-49 of the Opinion of Sharpston in case C-258/11.
  - It is a matter for the Board to carry out the screening for AA. However, the listed European Sites were correctly screened out or excluded from further assessment on the basis of objective information that the project, either individually or in-combination, will have no, or no appreciable effects, on those sites.
- **Community engagement**
  - Consultation was undertaken in with regard to the Code of Practice for Wind Energy Development in Ireland – Guidelines for Community Engagement, published in 2016. A detailed description of consultation is set out in Chapter 5 of the EIAR. This included: a Community Liaison Officer; house calls; newsletter drops; dedicated phone line, email address and website; and a workshop on LVIA. Covid-19 prevented further workshops. An online workshop was held.
  - Observations and issues that arose during consultation have informed the design, assessment and mitigation measures.
- **Hydrology**
  - Proposed stormwater infrastructure has enough capacity to cater for and retain excess stormwater volumes and there is no increase in the flood risk downstream.
  - Concerns raised in Martina Kinsella's appeal and raised in community consultation are addressed in Section 10.5.3 of the EIAR. One turbine (T6) is proposed in the same catchment as her farm buildings (Kildavin_Stream_010 sub-basin) at a distance of 1.1km. It was concluded in the EIAR that construction of this turbine will not increase the flood risk at the site or downstream of the site.

- Coillte volunteered to clear out drains at the Kinsella property however this offer was not accepted. The Greenoge Wind Farm site is within Clody_010 sub-basin which is on the other side of the hill to the Kinsella property. There is only one Greenoge turbine within the Kildavin_Stream_010 sub-basin. The hardstanding area of the turbine is permeable and there is no evidence that Greenoge Wind Farm had an impact on the appellant's property.
- Cumulative impact of the proposed and existing wind farms was assessed and there will be no significant impact on hydrology and water quality.
- Proposed drainage design is based on retaining and dispersing surface runoff via diffuse outfalls. There will be no concentration of flows. Increase in runoff is not significant and the potential storage capacity of drainage infrastructure is greater than the potential volumes that could occur. The proposed development will reduce the do-nothing flood risk scenario.
- In relation to contamination of watercourses with concrete, it is not clear if Greenoge Wind Farm construction caused this. There are no open watercourses in the vicinity of that wind farm and no hydraulic linkage to drains running towards the Kinsella property.
- Cement residue and all other contaminants will be controlled via pollution control measures contained in the CEMP. No batching of wet cement products will occur within the main wind farm site and concrete will be poured during dry conditions. There will be no impact on the Kinsella property due to pouring concrete.
- Potential impact of all elements of the entire project on the River Barrow and River Nore SAC were assessed in Chapter 10 of the EIAR, in the Biodiversity chapter and in the NIS. The cumulative assessment contained in Chapter 10 included other major developments in the proximity of the proposed development.
- Proposed borrow pit is 160m from a watershed boundary, resulting in a small catchment area draining towards the borrow pit. An upslope interceptor drain will prevent surface water entering the pit and water in the pit will pass through a settlement pond prior to discharge. The closest

waterbody is 380m from the borrow pit and the mitigation measures will address the potential for suspended solids and eroded soil to enter sensitive waters.

- The allegation that turbine T1 is within 50m of a waterbody is unfounded. The turbine is c. 300m east of the River Clashavey and c. 350m from the Aclare stream.
- There will be no change or increase to established flows in the area. Details of drainage infrastructure are contained in the EIAR and submitted drawings.
- The wind farm study boundary is within the Burren_010 and Douglas (Ballon)_010 sub-basins. No streams are located within 50m of a turbine and no turbine installation will take place in these sub-basins. Mitigation measures for the grid connection route are contained in the EIAR.
- Excavations for wind turbines will have negligible impact on water supplies because excavation will be limited in extent and duration and any temporary change in groundwater level will reverse once pumping stops and the excavation is backfilled. Such deep wells as stated by the appellants would not be affected by such works or the shallow excavations associated with the other elements of the project as the water from these wells has percolated through bedrock over a significant period of time.
- Mitigation measures are detailed within the EIAR to prevent pollution to wells.

- **Lands, Soil and Geology**
  - There are no historical records of landslide activity within or close to the wind farm. Unrecorded landslides do not make the EIAR inaccurate.
  - Landslides referred to in the Kinsella appeal are considered to be washout features caused by heavy rainfall onto the steep slopes. These incidents are liable to occur on any steep sided upland sites especially where bedrock is close to the surface. The presence or absence of the proposed development would have negligible impact on the likelihood of such slippages occurring.

- Landslides referred to in the Save Mount Leinster and Nearest Neighbours appeals are also typical of landslides caused by heavy rainfall.
- None of the landslides occurred within the Craughaun site indicating that there may be specific issues in the area where these failures occurred that is not replicated on the Craughaun site.
- The references to Derrybrien etc. are misleading as those failures occurred within sites where areas of deep, weak peat were present. Croaghaun site has only a thin peaty topsoil across the site. Peat failures are a completely different type of occurrence.
- Construction vibration impacts will be negligible as access roads and hardstanding will be constructed on a competent stratum, removing any loose or soft material vulnerable to instability caused by vibration.
- Low frequency vibrations were not assessed because there is no measurable effect on slope stability from wind turbine operation.
- While it is technically correct that “wind farm associated low-frequency vibration signals can propagate over long distances via the ground”, such vibrations do not pose a risk to the stability of slopes.
- Liquefaction would require a significant high frequency vibration and fine sands. Any low frequency and low amplitude vibrations from the wind turbines would be insufficient to cause this and would be transmitted into the bedrock on which the turbine bases sit, rather than overburden.
- There is no evidence that slopes outside of the site should be reclassified as ‘high’ susceptibility for landslides simply based on drainage patterns. Existing drains and watercourses are well established and the impact of any runoff from the proposed development on the stability of slopes downslope of the site is considered negligible.

- **SEA of NREAP, WEDG 2006 and Carlow Wind Energy Strategy**
  - County Development Plan (CDP) was subject to SEA. The Wind Energy Strategy is an integral part of the CDP and the policy objectives contained in the CDP were derived from it.

- Section 6 of the CDP had full regard to the NREAP and the policies contained therein were subject to SEA. Section 2.6.3 of the SEA makes reference to the Ministerial Guidelines which the Plan had regard to. This included the WEDG 2006. Stage 2 AA was also undertaken alongside the Plan.
- Site is designated for wind energy development as per the Wind Energy Strategy. The reasons for refusal did not cite an issue in principle with the proposed development in terms of land use energy designations in the CDP.

- **Noise, vibration and health**
  - Low frequency noise was addressed in Section 7.2.3.2 of the EIAR. A UK Dept. of Trade and Industry study found that low frequency noise associated with traffic movements along local roads has been found to be greater than that from the neighbouring wind farm.
  - Bowdler et al. (2009) concludes that there is no robust evidence that low frequency noise or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours.
  - Research undertaken by Snow and the Federal State of Baden-Wurttemberg found that vibrations do not cause a risk to human health. The latter concluded that at less than 300m from the turbine, vibration levels could no longer be differentiated from background vibration levels.
  - Health effects were addressed in Chapter 11 of the EIAR. The review of literature did not find any published credible scientific sources that link wind turbines to adverse health effects.
  - Noise Impact Assessment was undertaken in accordance with ETSU-R-97, however amplitude modulation can only be assessed by measurements once the wind farm is operational. Any issue can be addressed by the turbine manufacturer or operator.
  - Supreme Court decision in Balz and Heubach v An Bord Pleanála does not change the legal position of the WEDG 2006. The draft revised

Guidelines contain errors and inconsistencies and require further detailed review and amendment.

- WHO 45dB$_{Lden}$ recommendation was considered however the WHO document is based on a very limited data set and is 'conditional'. It would be premature to adopt the WHO recommendations without further detailed consideration.
- It appears the appellants have more confidence in the WHO guidelines than the authors of the guidelines.
- Assessment of acoustic character may not use standard methods for measuring noise, but there is still a requirement to measure the overall noise from a wind farm and this is where the L_{A90} noise indicator in the WEDG is required.
- While background noise measurements were not taken prior to the construction of Greenoge wind farm, this was acknowledged in the EIAR and the measured noise levels were corrected to remove the influence of the wind farm.
- A noise contour map was not provided as it would provide erroneous information for this site as it does not consider valley correction, which has been included as part of the operational noise predictions.
- The noise model assumes the worst case turbine available that meets the dimensional envelope. It also assumes that all receptors are downwind of all wind turbines, including cumulative impact from Greenoge wind farm. In practice, this will not be possible at some noise sensitive locations.

- **Biodiversity**
  - Detailed response to issues raised included as Appendix 3 to response submission.
  - Since submitting the EIAR, the updated Birds of Conservation Concern in Ireland 2020-2026 assessment was published. For robustness, an addendum to the impact assessment is included in Appendix 3.
- **Shadow flicker**

- Shadow flicker is adequately addressed in Chapter 12 of the EIAR.
- A mitigation measure is proposed in Section 12.5 of the EIAR to prevent operation of turbines during periods when shadow flicker exceeds the thresholds set out in the WEDG 2006. This will be done by way of light sensors and specialised software.

- **Telecoms**
  - The issue of potential impacts on telecoms is addressed in Chapter 16 of the EIAR. Consultation has been carried out with telecom providers and mitigation measures proposed where necessary.
- **Size of machines and lack of detail on foundation design**
  - Information on worst case foundation dimensions was included in the EIAR. Site investigation work was undertaken to confirm foundation size and to allow impacts to be assessed.
  - Sufficient turbine detail has been provided to allow for a full assessment.
- **Haulage figures and quantities**
  - The Save Mount Leinster appeal does not provide their method of calculating material volumes and the load estimates are overestimated. They also make incorrect assumptions.
  - Material volumes and trip generation have been accurately calculated for all aspects of the project. Existing forestry roads will be repurposed, settlement ponds will be volume neutral, bedrock levels are understood throughout the site, 3D modelling was used to optimise earthworks.
  - EIAR assessment includes conservative assumptions.
- **Archaeology**
  - DAU submission concurred with the archaeological mitigation strategy contained in the EIAR and recommended an archaeological monitoring condition.
  - LiDAR was used to examine the area of the wind farm to confirm any visible surface traces of potential unrecorded sites. The cable and turbine

delivery routes were instead assessed through conventional desktop and field surveys. The methodology was based on relevant guidance.

- Chapter 14 of the EIAR robustly assessed the grid route and turbine delivery route.

- **Visual impact**
  - The Board is referred to Chapter 15 of the EIAR and to the first party appeal and its associated Appendix 2.
- **Site selection and alternatives**
  - Chapter 2 of EIAR detailed reasonable alternatives studied and the main reasons for selecting the chosen option. It compares the potential residual effects versus a 'do nothing' scenario.
  - Proposed development has the potential to prevent up to 1.8m tonnes of CO_2 emissions over 35 years, which would otherwise be released through the burning of fossil fuels in the 'do nothing' scenario.

6.6.3. Third Party Responses

6.6.4. Responses to the first and third party appeals were received from Martina Kinsella and Save Mount Leinster and can be summarised as follows.

- **Martina Kinsella**
  - The circumstances of the previous grants of permission for wind turbines in the area were far different to the present application. The previous applications flouted the Aarhus Convention, the size of the turbines has increased dramatically, more knowledge of the impacts on flora and fauna is available and the importance of tourism for County Carlow was never more relevant.
  - Appellant has suffered significantly from existing wind farm and the cumulative impact of adding the proposed wind farm will exacerbate problems.
  - Risk of landslides due to shale.
  - No natural baseline was available to conduct studies, due to existing wind farm.

- Applicant is relying on the precedent set by the 125m turbine added in 2018 and the downward inclination of the slope next to it to justify the proposed turbines as not being out of character.
- Visual and landscape impacts and impacts on Mount Leinster Heritage Drive and Nine Stones viewing point.
- Birds in the locality keep their distance from the Greenoge Wind Farm and are moving down to lower areas, closer to human activity.
- Research studies indicate growth and developmental retardation in embryos following exposure to noise.
- Evidence from around the world of birds killed by wind turbine blades, including eagles, owls, buzzards. Impacts also on bats and insects.
- Disruption on residents, farmers, first responders and tourists due to proposed use of L2026 as a haul route.
- Proposed use of private drives and entrances as pull-in points without consent of the owners.
- Under-estimation of HGV loads. Failure to account for traffic associated with tree felling.
- Lack of clarity regarding the filter material to be used in silt protection controls. Lack of certainty with regard to environmental mitigation measures and accountability.

- **Save Mount Leinster**
  - Save Mount Leinster endorses and supports the other third party appeals.
  - Martina Kinsella's appeal underlines the poor assessment in the previous planning applications/outcomes and the importance of making a proper up to date analysis based on best evidence, scientific and empirical. It is direct evidence of noise nuisance from wind turbines and of existing unacceptable impacts.
  - First party appeal fails to resolve the issues set out in the refusal reasons and the additional refusal reasons raised by other appellants. It also raises

new difficulties, including the use of property owned by others whose consent has not been furnished.

- The report on Birds of Conservation Concern in Ireland shows 23 species moving onto the Red list, with 54 species now on that list. Upland and farmland habitats have the highest proportions of Red listed species.
- Layout and presentation of EIAR data is poor and confusing. It is difficult to be sure of exact number of bird sightings. When surveys are combined, the number of sightings in and around the site rise to 95, with 15 critically endangered birds and 29 birds of major conservation concern.
- The number and diversity of bird species indicates that Croaghaun and the surrounding area is a thriving ecosystem. There are also 8 species of bat and a healthy otter population.
- The Annex I Dry Heath and Blackstairs Mountains SAC support a diverse community of plant and animal life and is one of the most species rich plant habitats in Europe.
- Croaghaun acts as an ecological corridor to all the ecologically valuable habitats in the area.
- Habitat deterioration and fragmentation, as well as a reduction in habitat connectivity pose a major threat to habitats, birds and pollinator species.
- Croaghaun cannot be seen in isolation. It is an integral part of an ecological continuum.
- Articles 6(10) and 10 of the Habitats Directive are noted.
- Proposed development is in breach of the Habitats Directive, Birds Directive, National Biodiversity Action Plan and EU Biodiversity Strategy.
- It is acknowledged that there is a climate crisis, but there is also a biodiversity crisis. The net loss to the environment is too great and outweighs any compelling need for 38MW of low carbon power.
- The Climate Action Plan does not specify binding targets for onshore wind energy or County targets for particular types of renewable energy projects.

- The applicant's appeal ignores the permitted and live planning applications for solar energy projects in the County.
- Greenoge Wind Farm and the previous planning decision at this site predate the SEA Directive and LCA.
- MacroWorks cannot be considered to possess the impartial and extensive knowledge afforded to CAAS as a result of their work on 2015 review of the Carlow Landscape Character Assessment. That review included detailed fieldwork and consultation. CAAS are the pre-eminent experts in the area of the Carlow landscape.
- The applicant ignores the fact that the average tip height of the Greenoge turbines is 90m less, that they are on a much less elevated site and that they were consented before the preparation of the original Landscape Character Assessment.
- Proposed development would be an intrusive and pervasive feature on the landscape and would have a significant adverse impact on the visual and residential amenity of the area.
- Local testimony points to the entire site being Dry Heath and blanket bog prior to 1950 when it was planted with monoculture forestry. There has been little or no grazing or burn-off over the past 20 years and the bracken and bramble referred to as invading both areas only exists along their boundaries.
- The degraded status of areas A and B does not declassify these habitats which can be restored, as called for under the EU Action Plan for Dry Heath.
- Applicant's claims regarding robustness of bat surveys are refuted, with reference to SNH Guidelines: lack of above canopy automatic static surveys, failure to conduct roost surveys within 200m plus rotor radius, cumulative impact not assessed, inadequate mitigation and use of outdated data.

- Applicant's claims regarding Merlin are refuted. Breeding Merlin surveys were conducted in inappropriate habitats, ignoring the alteration of nesting habits by the species due to loss of open habitats.
- Transect surveys were part of a general raptor breeding walkover survey and not species specific as would be required for Merlin. Large areas of the site were not covered by the transect surveys and vantage point surveys were undertaken simultaneously, potentially creating observer impact on bird behaviour. VPs were carried out while felling and other construction activities were ongoing.
- Additional ornithological surveys for Summer 2020 employed inappropriate methodology in the wrong habitat and their absence from the original application, lodged in January 2021, raises further questions.
- Merlin population in Ireland is numbered between 100 – 200 pairs. The applicant's statement that "Merlin were only recorded on four occasions" points to a lack of understanding of the crucial nature of any population recorded. With numbers so low, it is impossible to see how after a 35 lifespan, 'Slight-Imperceptible Reversible Residual Impacts, in the local context on Merlin" is an accurate appraisal of the situation.
- Large numbers of Greenland White-fronted Geese, an Annex I critically endangered species, migrate through Carlow with populations of up to 100 sighted within 3-8km of the site. The height of the turbines and their location on a potential migration corridor will have an adverse impact.
- Considerable populations of Whooper Swans have been sighted within 3-4km of the site, which contradicts the applicant's appeal.
- Applicant relies on outdated studies throughout its application that are up to 20 years old and are not based on turbines of the size proposed. They have failed to provide evidentiary proof that turbines of this size in an upland area rich in biodiversity will not have a catastrophic negative impact on bird species.

6.7. Further information

6.7.1. The Board sought further information from the applicant on 21st December 2021, as follows:

1. It is noted that the development description as set out in the statutory notice refers to a maximum blade tip height of 178m in the development description. To enable the Board to determine the appeal please confirm the nature and extent of the development for which permission is sought, by reference to plans and particulars which describe the works to which the application relates, in compliance with the relevant provisions of the Planning and Development Regulations 2001 as amended.
2. If the development for which permission is sought incorporates a range of options, please indicate clearly in the application documentation the detail of all such options and confirm that each option has been fully assessed within the application documentation including the Environmental Impact Assessment Report and/or Natura Impact Statement as appropriate.

6.7.2. A response was received on 1st February 2022 and can be summarised as follows:

- **Item No. 1:**
  - Applicant wishes to clarify that: application is for 7 No. turbines (not 'up to' 7 No. turbines); met mast will have height of 100m (not 'maximum height' of 100m); turbine foundations will be 22m diameter and 4m depth; turbine range will be:
    - Tip height range from 169m to 178m.
    - Hub height range from 102.5m to 112m.
    - Rotor diameter range from 132m to 138m.
  - Grant of permission for the turbine range will ensure a competitive procurement tendering process, enabling cost effectiveness and more competitive energy prices.
- **Item No. 2:**
  - Applicant has reviewed EIAR and NIS to ensure comprehensive assessment of turbine range, met mast height and foundation dimensions.

- 7 No. turbines, 100m met mast and foundation dimensions of 22m diameter x 4m depth has been assessed throughout the EIAR and NIS.
- Each EIAR chapter and the NIS have been reviewed to ensure that the turbine range has been fully assessed. Updates have been provided in the RFI response for Chapters 6, 7, 8, 11, 12, 15 and the NIS.
- **Noise and vibration:** Regardless of which turbine is selected within the turbine range, the noise levels will be within the noise levels committed to in the EIAR.
- **Air and Climate:** The range of turbines will have an overall positive impact in terms of carbon reduction and climate change.
- **Biodiversity:** Limited range of turbines will have no effect on footprint and therefore will not change the conclusions of the EIAR and NIS with respect to terrestrial and freshwater habitats and species. With regard to bats, the marginal differences in dimensions do not change the risk assessment for bat collisions. Possible reduction in blade to ground clearance may require additional felling for bat buffer zones. This will not change the scale and magnitude of predicts effects, with residual effects the same as in the EIAR. Difference between the predicted increase in bird mortality rate in the EIAR and NIS and those with the range of turbines are negligible. Conclusions of EIAR and NIS regarding bird collision is unchanged.
- **Shadow flicker:** Irrespective of which turbine is chosen, effects will be no greater than the base case and the overall significance of shadow effect is as concluded in the EIAR.
- **Landscape and visual impact:** Comparative scenario photomontages are provided with the RFI response for a number of key views. The variation in turbine dimensions is very difficult to discern across the 3 scenarios. EIAR considered worst case scenario.
- Conclusions to AA Screening and NIS remain unchanged. The NIS as supplemented by the RFI response contains information to enable the competent authority to determine that all reasonable scientific doubt has been removed as to the effects of the proposed development on the integrity of the relevant European Sites.

6.8. Submissions on Further Information

6.8.1. The applicant's response to the request for further information was circulated to the parties for further submissions or observations. I note that a number of the submissions repeated or reiterated issues previously raised in earlier submissions. The additional issues raised can be summarised as follows:

- **Carlow County Council:**
    - It is not considered that the new information submitted by the applicant satisfactorily addresses the reasons for refusal. The Planning Authority's position remains as per the Planning Report recommendation.
- **Martina Kinsella:**
    - There is a constant stream of new insight, information and evidence coming to light confirming appellant's claims. Details and internet links provided in submission.
    - Applicant's findings on shadow flicker are disputed. Shadow flicker from the existing Greenoge Wind Farm has extended beyond the expected range, reaching appellant's house. Applicant is attempting to distance themselves from the responsibility of being accountable for failing to supply specific data that will hold up when the wind farm is in operation.
- **IHPA:**
    - Updated information does not update Chapter 16 'telecommunications and aviation'.
    - Similar mitigation to that proposed by IHPA has been put in place for Ballykeel Wind Farm in Northern Ireland. A letter from Ulster Hang Gliding and Paragliding Club is enclosed with the IHPA submission.
- **Patrick McLean:**
    - There is no renewable energy target or quota set for any county.
    - Study on wintering swans for Fijn et al (2012) is misleading, as it was conducted on flat polder lands in the Netherlands which is not comparable to the Croghaun site. One fact that is consistent with all wind farms is the

displacement of birds and the displacement of habitats. This cannot be mitigated.

- Percival report on disturbance is widely misquoted. Approach recommended by Percival has not been followed or implemented and there is no reference to 178m high turbines in Percival.
- Walkover study for wading birds was inadequate. Townland of Bealalaw cannot be observed from viewpoints VP4 or VP5. Amount of time for survey was inadequate. Appellant has observed all of the bird species in the area.
- There have been no recent surveys carried out on the effects on the bat population by wind farms of 178m in height.
- Greater depths of peat present in several locations than identified by the applicant. Impacts of peat slippage and storage of arisings.

- **Save Mount Leinster:**
  - Pages were missing from the information circulated to them. They request the missing pages and further time to respond.
  - Applicant did not respond to what the Board requested. Instead they supplied new information which purports to meet the Board's requests.
  - Application was invalid, it remains invalid and the Board has no jurisdiction to grant permission for it.
  - Applicant has not addressed the noise issues raised by the appellant. They continue to rely on outdated guidelines. There is no material before the Board to address or controvert the scientific and technical materials submitted by the appellant and the Board has no contradictory evidence to the evidence provided by the appellant of adverse impacts on people from wind turbines.
  - Dick Bowdler, the author of the 2005 analysis of the ETSU document, is an acoustician of over 50 years experience. He is not an outlier in the field of acoustics.

- The Board is reminded of the Balz and Heubach v ABP judgement and the conceding in the case of Barna Wind Action Group v ABP. It is not enough to rely on the WEDG 2006.
- Applicant admits in para. 2.2 of their response that noise from their wind turbines in combination with the Greenoge turbines will exceed even the limits applied using the outdated and unscientific methodology of ETSU and WEDG. They say they will reduce the noise from their turbines when this happens but none of this is reliable as a basis for decision making.
- Without the necessary reliable and scientifically robust information, the Board cannot make a decision on the impact the proposed development will have on the community and it does not have the jurisdiction to grant permission.

Note: Subsequent to the receipt of this letter, Save Mount Leinster were given an opportunity to respond to the further information again, by way of letter dated 27th June 2022 with a response deadline of 18th July 2022. They did not provide a further response.

- **Observers:**

  A total of 61 No. further submission were received (see Appendix B). Additional issues, beyond repetition of previously raised issues, included:

  - 178m high turbines will devastate the area and views from the Nine Stones.
  - Applicant's appeal should have been dismissed or determined without further notice as the applicant did not respond to the request for further information in time. The Board's subsequent second request contradicts s.133 of the 2000 Act.
  - Applicant's desire for flexibility with regard to dimensions is understandable from a commercial perspective but does not exclude them from the same requirements as everyone else who lodge a planning application. Applicant has not adequately responded to Board's request for clarity.

- EIAR and NIS have not been comprehensively assessed in relation to the queries raised by the Board.
- Biodiversity Action Plan is as important as Renewable Energy policy.
- EPA Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3) identifies the unreliability of measuring wind speed at 10m height which can lead to problems with the speed increase between 10m and hub height. Background noise measurement should be referenced to hub height wind speed.
- French court made a recent ruling regarding health impacts associated with wind turbine syndrome.
- Applicant has acknowledged that noise levels would be exceeded. With regard to other wind farms being cited, two wrongs don't make a right.
- Hundreds or thousands of Golden Plover have been observed in adjacent fields en route to and from wintering grounds in South Wexford.
- Scottish Government has confirmed that ETSU-R97 is no longer fit for purpose.
- Information provided regarding foundations is inadequate and does not demonstrate how construction can be completed on a steep slope. Major ground works will be required and no cut or fill sections have been provided.
- Further information does not make reference to how construction will be managed and construction traffic, noise and pollution impacts mitigated.
- Information on proposed turbine type, dimensions and impacts is still inadequate. Health and safety implications of turbines.
- Contamination of wells with locally occurring chemicals including lithium, caesium, tungsten and tantalum.
- Alteration of underground and surface water courses.
- Nature and extent of proposed development has been broadened rather than clarified.

- Environmental costs outweigh CO2 benefits of proposed development. Solar energy more suited to Carlow and the county can meet renewable energy targets without this development.

6.9. Oral Hearing

6.9.1. The Board decided on 30th July 2021 that an oral hearing should not be held.

7.0 Assessment

7.1. There are three elements to my assessment: a planning assessment, an environmental impact assessment (EIA) and an appropriate assessment (AA). In each assessment, where necessary, I refer to the issues raised by parties in the various submissions to the Board. There is an inevitable degree of overlap between the assessments, however I will endeavour to avoid undue repetition and will cross-reference where necessary.

8.0 Planning Assessment

8.1. Introduction

8.1.1. A wide range of issues have been raised in the first and third party appeals, the response to appeals and in the observations. I consider that the principal planning issues arising are as follows:

- Principle of proposed development.
- Size of turbines and foundations.
- Landscape and visual impact (refusal reason No. 1).
- Effects on Biodiversity and European sites (refusal reason No. 2).
- Construction traffic and haul routes (refusal reason No. 3).
- Public consultation.
- Impact on hang-gliding/paragliding activities.
- Shadow flicker.

- Strategic Environmental Assessment.
- Impact on property values.
- Other issues.

8.2. Principle of Proposed Development

8.2.1. The principle of the proposed development and compliance with the Development Plan was raised by a number of third parties. I note that the Planning Authority did not refuse permission on the basis of the principle of the proposed development.

8.2.2. Under the previous Development Plan that was in effect at the time of the Planning Authority's decision, certain small areas were identified as 'Open to Consideration' for wind energy development within and in the vicinity of the appeal site. These generally comprised a fragmented series of very small triangular areas, or polygons, and as the EIAR notes, there was no apparent logical rationale for these polygons. The low resolution of the map contained in the Wind Energy Strategy for the previous Plan makes it difficult to ascertain the exact location of each polygon, however it is accepted by the applicant and third parties that the proposed development includes turbines outside of what were then 'Open to Consideration' areas.

8.2.3. The Planner's Report, noting that the site was partially within the 'Open to Consideration' areas, stated that "the overall principle of the subject development will therefore be determined by a number of environmental sensitivity factors including the ability of the landscape to visually absorb the proposed development in addition to residential and general amenity impacts of the project on the locality".

8.2.4. The Board will note that, subsequent to the lodgement of the appeals, the Carlow County Development Plan 2022 – 2028 has been adopted and has come into effect.

8.2.5. The Renewable Energy Strategy (RES), which is included as an Appendix to the new Development Plan, indicates the site as being located in an area of viable wind speeds, and within one of only two 'available areas >5km' in the County, which takes account of various environmental, heritage and amenity constraints. The RES refers to the 2015 Landscape Character Assessment, which forms part of the current and

previous Development Plan, and makes the following statement with regard to land use policy:

> "In the south-eastern area of the county, close to the border with County Wexford and County Wicklow, where the wind speeds are favourable and where constraints mapping suggests that adequate separation distances to dwellings would be available – see area in blue on Figure 6-3. The landscape type is 'Uplands', therefore potential for new wind farms is affected by the land use policy, which identifies that wind farms are not normally permissible in the 'Uplands' Landscape Type of the Mount Leinster – Blackstairs Mountains LCA."

8.2.6. Renewable energy Policy RE P1 seeks to encourage and facilitate the production of energy from renewable sources, including wind, subject to compliance with proper planning and environmental considerations. Similarly, renewable energy Objective RE O1 seeks to achieve a minimum of 130MW of renewable electricity in the County by 2030, by enabling renewable energy developments.

8.2.7. With regard to the contribution of wind energy to the renewable energy target for the County, Table 6-4 of the RES sets out a utility scale wind resource summary for the County and provides a 30MW overall working target by 2030, including 6MW of new wind farms.

8.2.8. With regard to wind energy policies, I note the following:

- **WE P1:** Have regard to the Department of the Environment, Heritage and Local Government's Guidelines for Planning Authorities on Wind Energy Development (or any update to this document).
- **WE P4:** Wind farm development will not normally be permissible in the Uplands Landscape Type as shown in Figure 6 of the Carlow County Landscape Character Assessment included as Appendix VII to this Plan. This provision shall not apply to micro energy generation and community energy projects as provided for in Section 7.10.3.5, where deemed appropriate and subject to compliance with proper planning and environmental considerations.

- **WE O1:** Increase the penetration of wind energy generation in County Carlow at appropriate locations and scale and subject to compliance with proper planning and environmental considerations.

8.2.9. As set out in Section 5 above, there is a wide range of policy at European, national and regional levels supporting an increase in renewable energy generation, including wind energy development. Similarly, the new Development Plan contains policies and objectives supporting climate action and renewable energy, including wind energy development. However, this is only at appropriate locations and subject to compliance with proper planning and environmental considerations, as per Objective WE O1. It is also noted that the RES envisages that new wind energy development will make a relatively small contribution to the County's overall renewable energy targets.

8.2.10. Policy WE P4 states that wind farm development will not normally be permissible in the Uplands Landscape Type, as identified in the Landscape Character Assessment. The proposed development is located in this Uplands area. Policy WE P4 goes on to state that it shall not apply to 'micro energy generation and community energy projects', however the proposed development does not come within either of these two classes, as defined in Section 7.10.3.5 of the Development Plan.

8.2.11. I note that Section 6.1.5.3, which relates to extensions to existing wind farms, states that "one way to further avail of the wind energy resource in the county is to extend existing wind farms by adding new turbines. A site by site analysis of potential for extensions has not been carried out for this RES". The related Policy WE P2 seeks to "support the re-powering of existing wind farms when they come to the end of their operational life, and extensions to existing wind farms, subject to compliance with proper planning and environmental considerations".

8.2.12. While it could be argued that the proposed development 'reads' as an extension to the existing Greenoge Wind Farm, from a visual impact perspective, it is nevertheless a standalone wind farm proposal, served by separate access tracks, electrical cables and substations etc. I therefore do not consider that this provision of the Development Plan applies.

8.2.13. I conclude, therefore, that the proposed development would materially contravene Policy WE P4 of the Carlow County Development Plan 2022 - 2028.

8.2.14. The Board will be aware that under section 37(2)(a) of the Planning and Development Act 2000, as amended, it may, in determining an appeal under that section, decide to grant a permission even if the proposed development contravenes materially the Development Plan.

8.2.15. However, noting that the recently adopted Development Plan and its associated Renewable Energy Strategy was prepared with due regard to current national and regional climate action and planning policy, and was subject to evaluation by the Office of the Planning Regulator for compliance with said policy, I do not recommend that the Board utilise its powers under section 37(2)(a).

8.2.16. As noted in Section 4 above, the Board previously granted planning permission for a wind farm on the site in 2003 (ABP Ref. PL01.203283; Reg. Ref. PL03/180). The wind farm, which was not constructed, was reduced by way of condition from 10 No. to 7 No. turbines with an overall height not exceeding 87m. I consider that decision to be of limited note at this remove, given the changes in planning and environmental policy, legislation and practices in the interim.

8.2.17. In conclusion, I consider that the appeal site is located in an area where further wind farm development is not normally permissible and that the proposed development would therefore materially contravene Policy WE P4 of the Carlow County Development Plan 2022 - 2028. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area and I recommend that planning permission be refused on this basis.

8.3. **Size of Turbines and Foundations**

8.3.1. It is contended in the third party appeals that there is a lack of detail with regard to the proposed turbine dimensions and the foundations required for the turbines.

8.3.2. The original application was for turbines with a tip height of ‘up to 178m’ and a rotor diameter of ‘up to 138m’. It was considered that this was unacceptably imprecise and the Board therefore issued a request for further information to seek clarity on this issue. The applicant, in response, has set out the following proposed turbine range:

- Tip height range: 169 – 178m.

- Hub height range: 102.5 – 112m.
- Rotor diameter range: 132 – 138m.

8.3.3. The applicant also confirmed that the turbine foundations will have a diameter of 22m and depth of 4m.

8.3.4. The stated purpose of providing a range of tip and hub heights and rotor diameters is to avoid limiting the applicant to a particular turbine to facilitate a competitive procurement tendering process and to avoid limiting the development to turbines available at the time of the planning application.

8.3.5. With regard to the implications of the abovementioned turbine range for each of the environmental topics in the EIAR and the conclusions of the NIS, the applicant addressed this in their response to the RFI and this will be considered, where relevant, in the appropriate sections of this report.

8.3.6. A number of the third party appellants and observers contend that it is not appropriate to provide any flexibility regarding turbine size and that the applicant should be restricted to a particular turbine specification.

8.3.7. I consider that the clarifications provided by the applicant provide sufficient information on the nature and extent of the proposed development to allow the Board to determine the appeals before it. I also consider that a limited degree of flexibility within narrowly specified limits is appropriate for a development of this type, given the time-lag between preparing the application and procuring the turbines. Allowing such limited flexibility is, however, dependant on the robust assessment of the potential environmental impacts of the turbine range. This will be addressed as appropriate in the relevant sections of this report.

8.3.8. Should the Board be minded to grant permission, I recommend that a condition be imposed restricting the final turbine selection to the abovementioned turbine range.

8.4. Landscape and Visual Impact (Refusal Reason No. 1)

8.4.1. The first reason for refusal was that the proposed development would have an adverse visual impact on the Blackstairs and Mount Leinster Uplands Landscape Character Area and very significant landscape visual impacts on designated Scenic Route Nos. 10, 11, 12 and 16, and designated Scenic Views 1, 4, 24, 29, 30, 35, 36,

38, 39, 41 and 42. Accordingly, the Planning Authority considered that the proposed development would be contrary to Heritage Policy 1 of the Carlow County Development Plan 2015-2021.

8.4.2. I have addressed the issue of potential landscape and visual impacts in detail in Section 9.13 below, where I have concluded that the proposed development would not have any unacceptable direct, indirect or cumulative landscape and visual impacts that would warrant refusal of planning permission on that basis.

8.4.3. This conclusion does not, however, negate the fundamental policy issue identified in Section 8.2 above, which is that the proposed development would materially contravene Policy WE P4 of the Development Plan, which states that wind farm development will not normally be permissible in the Uplands Landscape Type.

8.5. Effects on Biodiversity and European Site (Refusal Reason No. 2)

8.5.1. The second reason for refusal related to potential impacts on an area of Annex 1 habitat identified as 'European Dry Heaths' [4030], as well as impacts on Bats, the Merlin bird species and migratory birds. The Planning Authority considered that the proposed development would materially contravene Heritage Objective 5 and Heritage Policy 2 of the Carlow County Development Plan 2015-2021.

8.5.2. Firstly, the Board will note that this reason for refusal states that the proposed development would 'materially contravene' Heritage Objective 5 and Heritage Policy 2 of the Carlow County Development Plan 2015-2021. I have recommended that planning permission be refused as set out in Section 8.2 above. However, should the Board be minded to grant permission, they will therefore need to consider whether they are constrained by the provisions of section 37(2)(b) of the Act.

8.5.3. I have addressed the potential impacts on biodiversity in Section 9.5 below. With regard to the potential impact on a possible area of Annex I European Dry Death [4030] habitat identified as 'Area A', which is not located within a European site, I have recommended that turbine T6 and associated infrastructure be omitted by way of condition, should the Board be minded to grant permission. Subject to this omission, I am satisfied that the remainder of the proposed development would not directly or indirectly impact on areas of Annex I European Dry Heath [4030] habitat.

8.5.4. With regard to the potential impacts on bats, I have concluded that the EIAR demonstrates an adequate understanding of the bat species and potential for roosts present within the site and its surrounds and has outlined a suitably comprehensive range of mitigation and monitoring measures to reduce the potential impacts on bats. I am satisfied that, subject to the implementation of the proposed mitigation measures and the monitoring programme, the proposed development will not have a significant negative residual impact on bats.

8.5.5. With regard to Merlin, having considered the information submitted by the applicant, and the matters raised in the third party appeals and observations, I am satisfied that, with the implementation of mitigation and monitoring, the proposed development is not likely to have a significant residual impact on Merlin.

8.5.6. With regard to migratory birds, noting: the distance of the site from the nearest SPAs and outside the core range of birds wintering at Wexford Slobs SPA; the lack of known foraging areas for migratory bird species in the vicinity; the results of the bird species; the evidence of the high ability of swans and geese to avoid wind turbines; and the provision of night-time aviation lighting on the turbines, I am satisfied that the proposed development is not likely to have a significant adverse residual impact on migratory birds.

8.5.7. With regard to overall biodiversity, I have concluded that the potential for significant adverse impacts can be avoided, managed and/or mitigated by measures that 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 impacts on biodiversity.

8.5.8. Appropriate Assessment is addressed separately in Section 10 of this report.

8.6. Construction Traffic and Haul Routes (Refusal Reason No. 3)

8.6.1. The third reason for refusal was that the applicant had failed to satisfactorily demonstrate that the local road network is of adequate capacity and design to accommodate the volume and frequency of proposed HGV traffic during the construction period and that the proposed development will likely have a significant adverse impact on the local road network, would endanger public safety by reason of

a traffic hazard and be contrary to the proper planning and sustainable development of the area.

8.6.2. This issue is addressed in Section 9.11 below, where I have concluded that, subject to suitable conditions including:

- pre- and post-construction road condition surveys;
- imposition of a bond to ensure road reinstatement;
- a revised Construction Traffic Management Plan to include: the amended HGV haul route proposed in the first appeal; the provision of a suitable number of passing locations on the L2026 Local Road; appointment of a Traffic Management Co-ordinator; management of HGV movements through control of delivery times, convoy systems and use of flagmen;

and noting:

- the temporary nature of construction works;
- the minimal operational traffic associated with the proposed development;
- the presence of the existing Greenoge Wind Farm which was constructed using the same local roads and the use of the local roads in the area for HGV movements associated with forestry and agricultural activities

I am satisfied that construction of the proposed development can be achieved without impacting on public safety by reason of a traffic hazard or otherwise having a significant residual impact on traffic and transportation. I therefore do not recommend that planning permission be refused on the basis of this issue.

8.7. Public Consultation

8.7.1. An issue raised in many of the third party appeals and observations was that the public consultation and community engagement undertaken by the applicant was inadequate, with a number of parties contending that the inadequate consultation was contrary to the Aarhus Convention and that issues raised in consultation were not addressed by the applicant.

8.7.2. The applicant contends that consultation was undertaken with regard to the ‘Code of Practice for Wind Energy Development in Ireland – Guidelines for Community

Engagement', published by the Department of Communications, Climate Action and Environment in 2016. Chapter 5 of the EIAR sets out the consultation process with the public and stakeholders. I note that this included house calls, newsletter drops, a dedicated phone line/email address, project website and a workshop focussed on LVIA. The applicant also appointed a Community Liaison Officer.

8.7.3. In addition to the abovementioned 2016 Code of Practice, I note Section 4.4 of the WEDG, which relates to 'Public Consultation with the Local Community', and states that:

> "Planning authorities should encourage developers to engage in public consultation with the local community. While it is not a mandatory requirement, it is strongly recommended that the developer of a wind energy project should engage in active consultation and dialogue with the local community at an early stage in the planning process, ideally prior to submitting a planning application."

8.7.4. Appendix 2 of the WEDG provides advice for developers on best practice in the pre-application public consultation process. It notes that providing the public with a good flow of information about a proposed development can avoid conflict in the future. It also refers to it being helpful to circulate information pertaining to a wind farm proposal to residents within c. 1km and to community groups, churches and clubs within c. 10km radius.

8.7.5. It is clear from Chapter 5 of the EIAR that consultation occurred with a wide range of relevant prescribed bodies and other stakeholders as part of the scoping and pre-application process. With regard to local residents and the wider local community, it is clear from the information submitted that this was focussed on residents within 2km, and that a variety of channels and methods of communication were used, as outlined above. A number of local groups, representing outdoor recreation and farming activities in the area were also contacted.

8.7.6. While the applicant's approach to public consultation was broadly consistent with the Code of Practice and WEDG, it was, perhaps, overly focussed on the immediate 2km environs, as evidenced by a number of observers who contend that they had been unaware of the project until late in the process. Given the scale of the proposed turbines, broader consultation and circulation of information within the 10km radius

referenced in the WEDG would have been of benefit from a public consultation perspective.

8.7.7. It is also clear from the information submitted by all parties that the restrictions associated with the Covid-19 Pandemic presented difficulties with regard to the public consultation process, and in that regard the use of remote engagement through website, email etc. is noted.

8.7.8. I consider that the applicant's approach has had regard to the relevant guidance for wind farms and that they have complied with their statutory requirements with regard to publication of site and newspaper notices. I note in this regard the significant number of observations made to the Planning Authority at planning application stage and the 5 No. third party appeals and 141 No. observations made to the Board at appeal stage, which is indicative of the wide level of public awareness of the proposed development. The third party appeals and observations set out detailed concerns regarding the potential planning and environmental impacts of the proposed development and there is dispute between the parties regarding the extent – if any – to which issues raised during consultation have informed the design of the proposed development and associated mitigation measures. These issues will be addressed throughout this report; however, I conclude that the applicant has demonstrated that adequate public and stakeholder engagement took place.

8.8. Impact on Paragliding/Hang-gliding Activities

8.8.1. The appeal submitted by the Irish Hang Gliding and Paragliding Association (IHPA) contends that the proposed development will impact on the use by hang-gliders and paragliders of Croaghaun Mountain, which is stated to have been a key site for such use for a prolonged period. The IHPA notes the recreational amenity and tourism benefits of their flying activities, with reference to the Development Plan and the County Carlow Outdoor Recreation Strategic Plan 2020-2023 (CCORSP).

8.8.2. It appears from the IHPA appeal that Turbine T3 has the greatest potential impact on free flying, although Turbines T2 and T5 are also identified as having potential impacts on safety. IHPA has proposed mitigation by means of a shutdown agreement, whereby Turbines T2, T3 and T5 could be shut down for limited periods per annum, to allow free flying to safely continue at the site. They have also

requested that an Aviation Impact Assessment be completed with a focus on the impact on free flying.

8.8.3. The applicant has provided a response to these issues, supported by a report prepared by Pager Power, who are stated to be aviation experts.

8.8.4. It is clear from the documentation submitted by the applicant and IHPA that there has been some consultation between the parties on this issue prior to the making of the planning application, albeit that IHPA consider the level of engagement to have been inadequate.

8.8.5. The potential impact on hang-gliding/paragliding activity is addressed in Chapter 11 of the EIAR, 'Population, Human Health & Material Assets', rather than in Chapter 16, 'Telecommunications and Aviation'. In adopting this approach, the applicant has considered hang-gliding/paragliding in the context of 'recreation, amenity and tourism', which I consider to be reasonable, given the nature of the activity. The consideration of aviation in Chapter 16 is restricted to potential interference with communications equipment and creation of obstacles to aircraft.

8.8.6. With regard to planning policy, I note that the CCORSP is a non-statutory plan, although it is referenced in the Development Plan, with Policy R P1 seeking to "promote the value of the County's outdoor recreational and amenity resources as key assets for the local economy and for the health and well-being of communities and continue to support the expansion of existing amenities". Similarly, Objective R O1 seeks to "support the implementation of County Carlow's Outdoor Recreation Strategy 2020-2023 and the Healthy Carlow County Plan 2018-2021, and any updated versions of these documents, as a means of promoting the development of outdoor recreational facilities and infrastructure in the County and increasing access to and participation in recreation and physical activity".

8.8.7. There does not, however, appear to be any reference to hang-gliding, paragliding or free-flying in the Development Plan nor any policies or objectives specifically supporting same. The CCORSP includes paragliding and hang-gliding in a list of typical outdoor recreation activities which take place in Carlow. It goes on state, in respect of the Blackstairs Mountains, that "while the opportunities and growth in hillwalking, mountain-biking and paragliding/hang-gliding in this area should be supported. The generosity of landowners in permitting access to these places must

also be respected". I therefore consider that there is no land use zoning or particular policy support for hang-gliding or paragliding in the area, other than general support for outdoor recreation and tourism activities, which would also support the proposed amenity walkways on the site. As noted by the applicant, the proposed development only affects 1 of 4 take-off locations used for hang-gliding/paragliding in the Blackstairs Mountains, and the other locations will be unaffected.

8.8.8. With regard to the status or designation of Croaghaun Mountain for hang-gliding/paragliding uses, IHPA refers to the Aviation Map of Ireland published by the Irish Aviation Authority, which marks the Mount Leinster area as an area used by hang gliders and paragliders. They also contend that Croaghaun Mountain is by definition an 'aerodrome' as defined in SI No. 355/2008 Irish Aviation Authority (Aerodromes and Visual Ground Aids) Order 2008.

8.8.9. The applicant contends that the site is not an 'aerodrome' as it is not identified as such on aeronautical maps and it is not licenced or listed as an aerodrome by the IAA. They also contend that the area is not designated for hang-gliding/paragliding by the IAA, but rather is identified for the purposes of warning pilots flying in this area to look out for hang-gliders and paragliders. I concur with the applicant's interpretation, as the IHPA has not provided any specific evidence to support their contention. I further note that the IAA made a submission as a prescribed body and did not identify any concerns with regard to matters within their remit.

8.8.10. It is clear that the proposed development would have a negative impact on paragliding and hang-gliding activities in the vicinity of Croaghaun Mountain. The EIAR considers this to be a moderate negative impact on the basis of a worst-case assumption that the westerly car park becomes unusable for hang-gliding and paragliding. The westerly car park is 1 of 4 take-off locations in the Blackstairs area, and the EIAR therefore contends that there will not be an overall significant impact on the activity in the wider area.

8.8.11. While the EIAR considers a worst-case impact on the use of the westerly car park, the Pager Power report contends that IHPA significantly overstate the impact of the proposed development in contradiction to their site guide and that the site is suitable for just 10% of the time, with further reductions due to precipitation, visibility and

daylight hours. The report contends that free-flying will still be possible from the westerly car park, with a minor reduction in the number of flights.

8.8.12. Having regard to the nature of the proposed development, there are clearly potential health and safety issues with the use of the area for hang-gliding and paragliding. These activities appear to be unregulated in Ireland, and ultimately the responsibility is on the hang-glider/paraglider pilot to choose a safe take-off location and to fly in a safe manner at a suitable distance from obstacles, such as the proposed turbines. For the purpose of this assessment, and notwithstanding the Pager Power report, I therefore consider it reasonable to assume that the westerly car park will no longer be suitable for take-off, given the proximity of the turbines. In light of this, I consider the assessment of the impact as being a moderate negative impact is reasonable, given the availability of other sites in the area.

8.8.13. In order to mitigate the impact, the IHPA has suggested the removal of turbine T3 or its movement 500m in an easterly direction and a condition requiring an operating protocol to be put in place, so that particular wind turbines can be shut down for a limited period each year, when free-fliers wish to take-off.

8.8.14. In their subsequent submission following the circulation of the further information response, the IHPA submitted a letter from the Ulster Hang Gliding and Paragliding Club (UHPC), stating that the UHPC has a legal agreement in place with the developers of the Ballykeel Wind Farm in Northern Ireland to allow them to request that turbines are stopped when specified wind speeds and directions are satisfied.

8.8.15. The applicant contends that moving turbine T3 by 500m is not possible due to turbine spacing requirements and impact on wind take of other turbines. They also state that they considered the operating protocol, but it would not be possible to implement, due to Grid Code compliance, which dictates how and when a wind farm can turn on/off and be operated, and the ability to secure appropriate insurance cover. In support of this second point they submitted a letter from their insurance broker. Notwithstanding the insurance difficulties identified by the applicant, I do not believe that such an open-ended and potentially onerous restriction on the operation of the proposed wind farm would be appropriate or sustainable.

8.8.16. With reference to the UHPC agreement with the developers of Ballykeel Wind Farm, it is not clear from the information provided what the basis of that agreement was

and I note that it was in a different jurisdiction where a different planning policy and legislative framework is in place.

8.8.17. The appeal site appears to be used for paragliding and hang-gliding activities on an informal basis and while there are clearly tourism and recreational benefits associated with such activities, there is no particular planning policy support for the activity at this location. If the development were to proceed, there are other locations in the Mount Leinster area where hang-gliding and paragliding can continue to take place, under the abovementioned worst case assumption that the westerly car park is no longer suitable as a take-off location.

8.8.18. I conclude that the potential impact on paragliding and hang-gliding activities would not be so significant as to warrant refusal of planning on this basis. Furthermore, should the Board be minded to grant permission, I do not consider that the imposition of conditions restricting the operation of wind turbines in circumstances where third parties wish to engage in hang-gliding/paragliding in the vicinity of the proposed wind farm would be reasonable or appropriate.

8.9. **Shadow Flicker**

8.9.1. A number of parties have raised the issue of shadow flicker, both individually and cumulatively with the existing Greenoge Wind Farm.

8.9.2. Shadow flicker is addressed in Chapter 12 of the EIAR. Shadow flicker effects were considered within a study area of 1,380m from each of the proposed turbines (i.e. 10 x max. rotor diameter). This is in accordance with the WEDG 2006, which states that the potential for shadow flicker at distances greater than that is very low.

8.9.3. I note that the modelling software used to calculate shadow flicker includes a number of conservative assumptions, including 100% cloudless skies and all turbines facing onto all receptors, which cannot happen in reality. It is therefore contended to be a worst-case assessment, which I would agree with.

8.9.4. The WEDG 2006 state that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day. However, a number of parties have noted that the Draft WEDG 2019 set out a zero shadow flicker policy. The EIAR assessment utilises the WEDG 2006 limits, and since those guidelines comprise the current applicable section 28 guidelines for planning

authorities, and in the absence of any scientific evidence that those limits would result in unacceptable impacts on sensitive receptors, I consider this to be appropriate.

8.9.5. The applicant's survey identified no receptors within the 500m area, and a total of 30 No. receptors within the wider 1,380m area, the closest of which was 984m from a wind turbine.

8.9.6. Of these 30 No. receptors, 12 No. exceed the 30 minutes per day threshold and 10 No. exceed the 30 hours per year threshold. This is under the worst case 'maximum theoretical hours per day/hours per year' (i.e. with sun shining 100% of the daylight hours).

8.9.7. Applying a more likely scenario, with average annual sunshine hours for the area taken into account, no receptors are predicted to exceed more than 30 hours per year. Similarly, utilising a more likely average theoretical hours per day, 2 No. receptors will slightly exceed the 30 minutes per day. These 2 No. receptors (21 and 25) are to the north of the proposed wind farm.

8.9.8. With regard to potential cumulative impacts with the existing Greenoge Wind Farm, the EIAR maps the 10 x rotor diameter distances from the smaller Greenoge turbines (60m and 90m). While there is considerable overlap between the potential shadow flicker areas for the two wind farms, there are no receptors within the Greenoge 10 x rotor diameter study area. One receptor (13) is located just outside the boundary of the Greenoge study area, but I note that it is entirely outside of the maximum shadow coverage associated with the proposed wind farm and thus is not likely to experience any significant additional shadow flicker.

8.9.9. In response to the request for further information, the applicant has modelled two additional scenarios for shadow flicker, utilising the proposed turbine range as outlined in Section 6.7 above. Scenario 1 is the EIAR scenario, while Scenario 2 is the largest rotor diameter (138m) with the lowest possible hub (102.5m) and Scenario 3 is the smallest rotor diameter (132m) with the highest possible hub (112m), respectively. The results of this additional modelling are set out in the RFI response and summarised in Table 3-21 therein. The analysis demonstrates that, regardless of which turbine is selected within the turbine range, the shadow flicker impact on receptors will be no worse than the base case set out in the EIAR.

8.9.10. In order to mitigate the potential shadow flicker impact, it is proposed to implement control modules in the turbines with software to prevent turbine operation during the specific periods when shadow flicker exceeds the thresholds. The use of such control mechanisms to address potential shadow flicker is a relatively standard feature in modern wind turbines and, given that shadow flicker effects, by their nature, lend themselves to accurate prediction, there is no reason to believe that the shut-down protocols would be ineffective in mitigating the potential impacts in the limited cases where they arise.

8.9.11. Subject to implementation of these mitigation measures, I do not consider that the proposed development would result in significant shadow flicker impacts at residential receptors within 10 rotor diameters of the turbines.

8.9.12. With regard to potential impacts on vehicles or pedestrians, I note that the WEDG only refer to shadow flicker limits in the context of dwellings and offices. I consider that any such impacts on vehicles and pedestrians would be fleeting and variable due to the receptor's changing position relative to the sun and turbine. I do not consider that any such impact would be so significant as to impact on road safety or public health.

8.9.13. If the Board is minded to grant permission, I recommend a suitable condition be imposed in relation to shadow flicker thresholds, control measures and the submission of a report to the Planning Authority to establish compliance with these requirements.

8.10. Strategic Environmental Assessment

8.10.1. Save Mount Leinster contend that the Board is bound by the CJEU judgment in case C-24/19 and that, since the National Renewable Energy Action Plan (NREAP) and the 2006 Wind Energy Guidelines were adopted without carrying out SEA, the Board is precluded from granting permission. They further contend that where an SEA is required but is not carried out, the plan or programme, as well as permissions for projects based on same, must be annulled.

8.10.2. Notwithstanding the judgment in case C-24/19, the Minister has not revoked the WEDG 2006 in the intervening years and has not finalised the 2019 Draft Guidelines. In these circumstances and noting the obligation placed on the Board to have regard

to guidelines issued under section 28 of the Act, I consider that the WEDG 2006 remain relevant guidelines that must be had regard to in determining this case.

8.10.3. With regard to the NREAP, I do not consider that any failure to undertake SEA of that Plan would preclude the Board from granting planning permission, since there is broad and aligned policy support at European, national, regional and local level for renewable energy projects, including onshore wind energy projects, at suitable locations. The potential environmental impacts associated with the proposed development are comprehensively assessed in Section 9 of my report.

8.11. Impact on Property Values

8.11.1. A number of observers contend that the proposed development will have a negative impact on property values. This issue is addressed in Section 11.4.4 of the EIAR, where the applicant notes the finding of a US study (Hoen et al 2009, updated in 2013) and a Scottish study (Heblich et al 2016) which both found that there is no evidence of a consistent negative effect on house prices due to the presence of wind turbines. Both studies were based on large sample sizes, with the Scottish study based on analysis of 500,000 property sales between 1990 and 2014.

8.11.2. The EIAR states that there have been no empirical studies carried out in Ireland on the impacts of wind farms on property prices. However, based on the international literature and noting both the presence of the existing Greenoge Wind Farm in the area and that there is a minimum separation distance of 984m from the nearest dwellings, I consider it reasonable to conclude that the proposed development is not likely to result in a significant impact on property values in the area.

8.12. Other Issues

8.12.1. <u>Strategic Infrastructure Development</u>

8.12.2. A number of observers contend that the applicant has incorrectly stated that the proposed development comprises Strategic Infrastructure Development but they contend that it does not meet the relevant thresholds.

8.12.3. This issue appears to be based on an erroneous statement in the conclusion of the first party appeal. The Board will be aware that the case before it is a normal

planning appeal and that the application was not submitted under the SID provisions of the Act.

8.12.4. Procedural Matters

8.12.5. A number of observers have contended that the Board should have dismissed the applicant's appeal or determined it without further notice, under the provisions of s.133 of the Act, when the applicant did not respond to the s.132 letter dated 11th November 2021 requesting that additional information be submitted by the 1st December 2021. I note, however, that the applicant wrote to the Board on 22nd November 2021 requesting additional time to enable the Board's request to be considered and responded to appropriately. The Board subsequently reissued the same s.132 notice, dated 21st December 2021, with a response deadline of 2nd February 2022. The applicant submitted a response on 2nd February 2022.

8.12.6. Under s.132 of the Act the Board has absolute discretion to serve on any party a notice requiring the submission of documents, particulars or other information as specified in the notice, where it is of opinion that said information may be necessary for the purpose of enabling it to determine an appeal. S.132(2) states that in default of compliance with the requirements of the notice, the Board will, after the expiration of the period so specified and without further notice to the person, pursuant to section 133, dismiss or otherwise determine the appeal or referral.

8.12.7. Notwithstanding this, I do not believe that there is any restriction on the Board issuing a further s.132 notice and given the applicant's request for additional time to provide an appropriate response, I consider such a further notice to have been appropriate in the interests of proper planning and allowing for a full and comprehensive assessment of the proposed development.

9.0 Environmental Impact Assessment

9.1. Introduction

9.1.1. The application is accompanied by an Environmental Impact Assessment Report (EIAR) which was prepared by Fehily Timoney.

9.1.2. This section of my report comprises an environmental impact assessment of the proposed development. As noted in Section 7 above, some of the matters

considered have already been addressed in the Planning Assessment above. This section of the report should therefore be read, where necessary, in conjunction with the relevant sections of the Planning Assessment.

9.1.3. The Board should note that the EIAR assesses potential environmental impacts associated with the proposed wind farm for which permission is sought as well as the potential impacts associated with other elements of the overall project, which do not form of the proposed development. These other elements comprise the turbine delivery route works and the grid connection works. The EIAR also contains an assessment of the forestry replanting, which again does not form part of the proposed development.

9.2. Format of EIAR

9.2.1. The EIAR comprises 3 No. volumes. Volume 1 is a Non-Technical Summary (NTS), which provides a summary of the EIAR in non-technical language. Volume 2 comprises the main body of the EIAR, and Volume 3 comprises a series of technical appendices relating to various chapters of Volume 2. The Natura Impact Statement is included as a separate standalone document.

9.2.2. This application was submitted after 16th May 2017, the date for transposition of Directive 2014/52/EU amending the 2011 EIA Directive, and therefore the subject application falls within the scope of the amending 2014 EIA Directive (Directive 2014/52/EU).

9.2.3. The EIAR:

- Describes the project and provides information on the site, design, size and particular features of the proposed development;
- Describes the likely significant effects of the project on the environment;
- Describes the features of the project and/or measures envisaged to avoid, prevent, reduce, and if possible, remedy significant impacts;
- Provides a description of the main alternatives studied, and an indication of the main reasons for the choice of alternative put forward, taking into account environmental effects; and
- Includes a non-technical summary of the above information.

9.2.4. As is required under Article 3(1) of the amending Directive, the EIAR describes and assesses the direct and indirect significant effects of the project on the following factors: (a) population and human health; (b) biodiversity with particular attention to the 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. It also considers the interaction between the factors referred to in points (a) to (d).

9.2.5. I have carried out an examination of the information presented by the applicant, including the EIAR and the submissions made during the course of the application and subsequent appeals.

9.2.6. Save Mount Leinster, in their appeal, contend that the Board does not have sufficient information before it on the various environmental factors to complete an EIA. However, I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality, and that the information contained in the EIAR and supplementary information provided by the developer is up to date, adequately identifies and describes the direct and indirect effects of the proposed development on the environment, and complies with article 94 of the Planning and Development Regulations 2001, as amended.

9.2.7. I am satisfied that the information before the Board is sufficient to allow the Board to reach a reasoned conclusion on the likely significant effects of the proposed development on the environment, taking into account current knowledge and methods of assessment.

9.3. Alternatives

9.3.1. The issue of site selection and alternatives is addressed in Chapter 2 of the EIAR. I note that 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;"

9.3.2. Annex IV of the Directive (Information for the EIAR) provides more detail on 'reasonable alternatives':

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

9.3.3. The EIAR describes the process by which Coillte screened its 441,000 ha landholding to identify suitable sites for wind energy development. The appeal site is one of 9 No. sites for which Coillte is in the process of seeking planning permission.

9.3.4. The EIAR describes the alternatives that were considered under the headings of 'do nothing', 'alternative processes – renewable energy technologies', 'alternative layouts and design', 'access track' alternative alignments and operational life alternatives. Alternative grid connection options are also addressed in the EIAR, notwithstanding that the grid connection does not form part of the proposed development before the Board.

9.3.5. The EIAR sets out a comparison of the proposed wind energy development and an alternative solar energy development. Given the high wind speeds at the site, a solar development with the same output would require c. 200 ha of tree felling, with associated environmental impacts. I am satisfied that such a solar PV development on this site would not be a preferable alternative.

9.3.6. With regard to alternative layouts and design, the EIAR outlines the iterative 'mitigation by design' approach, with set-backs from houses, designated sites, watercourses etc. and consideration of the site characteristics. It also considers scenarios for more smaller turbines versus fewer larger turbines.

9.3.7. While the Planning Authority and third party appellants contend that the EIAR's consideration of alternatives is inadequate or lacking in detail, I consider that it clearly and sufficiently outlines the reasonable alternatives that were considered, including a 'do nothing' alternative, and sets out the reasons for selecting the chosen option, based on consideration of the environmental effects. With regard to a potential restoration alternative, I do not consider that this would constitute an alternative to the renewable energy project proposed by the applicant, but would instead be a variant of the 'do nothing' option, which was considered in the EIAR.

9.3.8. The consideration of alternatives is an information requirement of Annex IV of the EIA Directive, and the single most effective means of avoiding significant environmental effects. Having regard to this requirement and its purpose (i.e. avoidance of significant environmental effects) and noting the nature and purpose of the proposed development, I am satisfied that the consideration of alternatives that were studied by the applicant is adequate.

9.4. Population and Human Health

9.4.1. Population and human health are addressed in Chapter 11[2] of the EIAR with regard to potential impacts on population, employment and economic activity, and human health and safety.

9.4.2. Other environmental topics with the potential to impact on population and human health, such as air quality, noise, shadow flicker, traffic & transport, landscape and visual impacts, soils and water are addressed separately in the relevant chapters of the EIAR and the relevant sections of this report.

9.4.3. The proposed development is located in a rural area in eastern County Carlow on the northern slopes of the Backstairs Mountains, in relatively close proximity to the border with County Wexford. Nearby settlements include Myshall, Kildavin and Bunclody. The EIAR states that there are 46 No. residential dwellings within 1.5km of the turbine locations, of which 14 No. are also registered as commercial (farmsteads). One additional permitted but not yet constructed dwelling has also been identified within 1.5km of the turbine locations. A further c. 137 No. one-off houses are located along the 23.2 km grid connection route.

9.4.4. The wind farm site and associated grid connection site are located in areas with low population numbers and densities, compared to both County Carlow as a whole and the State. The turbine delivery route passes through areas with a higher population density due to its proximity to built-up areas.

9.4.5. The proposed development is stated to result in between 46 – 62 jobs during the construction phase and 11 – 15 jobs in the operational phase. No significant impact on population or demographic trends is anticipated. The increased employment is

[2] Chapter 11 also addresses Material Assets, which I have addressed separately at Section 9.10.

stated to have a short-term positive impact on local businesses and services during the construction phase and a slight positive indirect impact in the wider area in the operational phase.

9.4.6. The EIAR notes that under the terms of the Renewable Energy Support Scheme (RESS), they will be required to put in place a Community Benefit Fund which is anticipated to be in the region of €200,000 per annum in the first 15 years, reducing to €100,000 for the remaining lifetime. The EIAR considers that this will be a long-term significant positive impact on the socio-economic profile of the study area, providing regular payments to near neighbours and funding community projects. The payment of rates and development contributions to Carlow County Council is also considered to be a significant positive impact in terms of the improvement of council services.

9.4.7. With regard to potential impacts on property values, the EIAR refers to large-scale US and Scottish studies which found no evidence of a reduction in home prices as a result of wind farm construction.

9.4.8. The EIAR concludes that although there have been no empirical studies carried out in Ireland on the impacts of wind farms on property prices, it is a reasonable assumption based on the available international literature, that the proposed development would not impact on property values in the area.

9.4.9. As the potential impacts of the proposed development on socio-economics, employment and economic activity are generally positive, no mitigation measures are proposed and the residual significant positive impacts are as identified above.

9.4.10. With regard to human health and safety, the EIAR sets out statistics for general health in the area.

9.4.11. The potential construction phase impacts on health and safety for construction workers and the general public are stated to relate to construction related activities including increased traffic, transport of heavy or bulky materials, noise emissions, dust emissions, construction on public roads, excavation and general site-safety.

9.4.12. Particular aspects of the construction works that may present health and safety issues include general construction site safety (e.g., slip/trip, moving vehicles etc.). lifting of heavy loads overhead using cranes, working with electricity, working at heights or in confined spaces, ground conditions and soil stability, substation

construction (high voltage electricity), road safety due to increased traffic numbers and transport of oversized loads, pedestrian and recreation user safety, installation of electrical cables on-site and in the public road corridor and potential emissions impacting air quality and noise. The EIAR considers that, in the absence of mitigation measures, the construction phase has potential for significant impacts to human health and safety for both construction workers and members of the public.

9.4.13. In the operational phase, the EIAR states that there are potential impacts to human health and safety if appropriate mitigation measures are not put in place.

9.4.14. Potential human safety issues due to falling ice from turbine blades is considered unlikely to present safety problems as turbines are fitted with anti-vibration sensors which cause the turbine to shut down until the blades are de-iced. Potential health and safety impacts for operation and maintenance staff are associated with working at heights, working at steep gradients or uneven ground, moving vehicles and machinery and working with high-voltage electricity. It is stated that properly qualified staff will be employed at the wind farm site and safety protocol will be followed at all times.

9.4.15. No likely significant negative impacts to public safety are anticipated with regard to the use of proposed and existing recreational forest trails through the wind farm site. The use of the trails is stated to have the potential to provide a long-term moderate positive impact to human health in the locality.

9.4.16. As part of the EIAR's human health assessment, an analysis of peer-reviewed literature on potential health impacts arising from wind energy projects was undertaken. It is stated that this identified anecdotal reports of negative health impacts in people living in close proximity to wind turbines but that peer-reviewed research has generally not supported these statements and the literature review did not find any published, credible scientific sources that link wind turbines to adverse health effects. The key literature considered by the applicant are listed in Section 11.7.3.2 of the EIAR.

9.4.17. With regard to 'Infrasound', which has been cited as a cause of potential health impacts, the EIAR states that wind turbines do not produce infrasound at amplitudes capable of causing annoyance. In support of this position the applicant refers to a UK Department of Trade and Industry study, ('The Measurement of Low Frequency

Noise at Three UK Windfarms', 2006) which concludes that there is no reliable evidence that infrasound below the hearing threshold produce physiological or psychological effects and that it may therefore be concluded that infrasound associated with modern wind turbines is not a source which may be injurious to the health of a wind farm neighbour.

9.4.18. With regard to shadow flicker and noise, the EIAR refers to the shadow flicker and noise assessments contained in the EIAR. In relation to shadow flicker, it is stated that there will be no exceedances to the guideline limits as set out in the WEDG 2006, while in relation to noise it is stated that operational wind farm noise levels meet the derived night and daytime noise limits at all residential properties surrounding the wind farm.

9.4.19. The EIAR concludes that there is no scientific consensus to support an association between negative health impacts and responsible wind turbine development. With respect to safety, it is stated that only trained and licenced employees will be permitted to access the turbines and that the operational phase of the proposed development will have a negligible impact on public health and safety.

9.4.20. With regard to potential health and safety impacts from electromagnetic radiation the EIAR refers to an EirGrid document which provides information on studies carried out by various international bodies and concludes that the consensus from health and regulatory authorities is that extremely low frequency EMFs do not present a health risk. There is EU and Irish law relating to minimum health and safety requirements for workers exposed to electromagnetic fields and the EIAR states that these laws will be complied with, resulting in a negligible impact to human health.

9.4.21. The EIAR also considers the vulnerability of the proposed development to major accidents and natural disasters including flooding, fire, major incidents involving dangerous substances and landslides. It concludes that the potential susceptibility of the proposed development to natural disaster is negligible. An emergency response plan will, however, be in place during the construction phase in the unlikely event of a landslide/slope failure.

9.4.22. During the decommissioning phase, the potential impacts in relation to human health will be similar to those associated with construction phase and the EIAR considers

that there is potential for significant impact to human health and safety for construction workers on site.

9.4.23. Cumulative Impacts

9.4.24. With regard to potential cumulative impacts, the EIAR considers the impacts of the overall development, including the grid connection works and turbine delivery route works that do not form part of the proposed development before the Board. Other projects in the study are also considered with regard to potential cumulative impacts. Overall, it is considered unlikely that any significant adverse cumulative impacts on population and human health would arise.

9.4.25. Mitigation Measures

9.4.26. The proposed mitigation measures during construction and decommissioning include: compliance with relevant safety, heath and welfare at work legislation; adequate training and certification of staff in health and safety including CEMP safety protocols and methodology; identification and risk assessment of hazards including mitigation and/or control measures where hazards cannot be eliminated; appointment of a competent contractor who will be responsible for the implementation of procedures outlined in the Safety & Health Management Plan; compliance with HSE and HSA guidance.

9.4.27. Public safety will be addressed by restricting access to the construction site and associated recreation trails for the 12-18 month construction period as well as the decommissioning period. Warning signage will be posted at the construction site entrance directing all visitors to the site manager and signage will also be provided on public roads approaching site entrances and along haul routes. Extra safety measures are proposed during turbine deliveries including Garda escort and a comprehensive turbine delivery plan.

9.4.28. Once mitigation measures and health and safety measures are followed, the EIAR concludes that the potential for impact on human health on the construction site and for members of the public during construction and decommissioning is expected to be not significant and temporary.

9.4.29. Operational phase mitigation includes: site safety measures for personnel including appropriate training and Personal Protective Equipment; enclosure of the substation by palisade fencing; design of electrical elements to comply with EMF standards for

human safety; marking out of underground cables where they extend beyond the track or hardstanding surface; installation of lightning conductors, shadow flicker detection systems and ice detection systems on turbines; remote monitoring and scheduled maintenance; design of site drainage will mitigate against any potential flooding; potential operation of some of the turbines in noise reduced modes of operation in order to protect residential amenity; inclusion of a kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency.

9.4.30. Residual Impacts

9.4.31. No significant adverse residual impacts are predicted following implementation of the mitigation measures.

9.4.32. **Assessment**

9.4.33. Construction of the proposed wind farm development would result in substantial investment in the area with employment opportunities for construction workers and secondary benefits for local services and materials providers. Given the short-term nature of the construction phase I do not consider that there would be any significant impact on the population or economy during the construction phase. In the operational phase, the development would generally be unmanned other than for maintenance and repair work and thus no significant employment or population impacts are likely. The applicant contends that there will be a significant positive socio-economic impact as a result of the Community Benefit Fund that will be required under the RESS and as a result of the payment of rates and development contributions. I agree with this assessment.

9.4.34. I have addressed the potential impact on property values separately above where I concluded that, based on the international literature and noting both the presence of the existing Greenoge Wind Farm in the area and the minimum 984m separation distance from the nearest dwellings, it is reasonable to conclude that the proposed development is not likely to result in a significant impact on property values in the area.

9.4.35. With regard to human health, I have addressed potential health-related issues such as noise, air/dust, water pollution, shadow flicker etc. elsewhere in this report. Given the nature of the proposed development there is potential for significant health and

safety impacts during the construction and decommissioning phases, however I am satisfied that the proposed mitigation measures, including the CEMP, adequate training and good practice construction methods, would be capable of mitigating these potential impacts to an acceptable residual level.

9.4.36. The issue of major accident hazards is also considered in the EIAR. Save Mount Leinster raise the risk of fire as an issue, noting fires at two other wind farms in 2014 and 2018. Such incidents appear to be relatively uncommon, and subject to appropriate maintenance, monitoring and training there is no reason to believe that there is a significant risk of fire as a result of the proposed development. I agree with the EIAR assessment that the vulnerability of the proposed development to major accidents is not significant. With regard to the issue of landslides, I have addressed this in the soils and geology section of my report.

9.4.37. I have considered all of the written submissions made in relation to population and human health and the relevant contents of the file including the EIAR. I consider that the proposed development will have significant positive impacts on the local socio-economic environment. I am also satisfied that the potential for significant adverse impacts on population and human health can be avoided, managed and mitigated by measures that 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 impacts on population or human health.

9.5. **Biodiversity**

9.5.1. Biodiversity is addressed in Chapter 8 of the EIAR. A Natura Impact Statement was also submitted with the application, and I have addressed the issue of Appropriate Assessment separately in Section 10.

9.5.2. The site does not overlap with any designated nature conservation site but is close to the Blackstairs Mountains Special Area of Conservation (SAC) and is upstream of the River Barrow and River Nore cSAC and the Slaney River Valley cSAC. In terms of Nationally designated sites, there are no Natural Heritage Areas (NHA) and 5 No. proposed Natural Heritage Areas (pNHAs) within 10 km of the proposed wind farm.

9.5.3. A series of ecological surveys were undertaken within the proposed wind farm site, as well as the route of the proposed underground grid connection and turbine delivery works route which do not form part of the proposed development before the Board. This included ecological walkover surveys, habitat surveys, botanical surveys, invasive species surveys and mammal surveys (including bats).

9.5.4. Two years of bat surveys were completed within the study area during the years 2019 and 2020. The surveys included habitat and preliminary roost assessments, summer roost inspection, winter roost inspection, bridge roost inspection, activity surveys (transects) and static detector surveys. Monthly activity bat surveys were undertaken within and near the boundary of the proposed wind farm site from June to September 2019, static detectors surveys were undertaken May to September 2019 and winter roosts surveys were undertaken on 27th March 2020 followed by a survey of watercourse crossings on 9th October 2020.

9.5.5. Bird surveys of the study area were undertaken during the winters of 2017-2018, 2018-2019, 2019-2020 as well as the summers of 2018 and 2019. Bird surveys included both Vantage Point watches and targeted distribution and abundance surveys for particular species. Surveys of aquatic ecology were undertaken in 2019 and 2020, and included walkover surveys, catchment wide electro-fishing, White-clawed Crayfish Survey, Freshwater Pearl Mussel Survey, biological water quality surveys.

9.5.6. No rare or protected flora were found during surveys, while two invasive species were observed within the main wind farm site. One stand of Rhododendron ponticum, a High Risk invasive species was observed within the western area of the site and a single area of Spanish bluebell (Hyacinthoides hispanica), a Low Risk invasive species was observed adjacent to an existing access track. Both Rhododendron ponticum and Spanish bluebell are listed in Schedule III under Regulations 49 and 50 of the EC (Birds and Natural Habitats) Regulations 2011, which makes it an offence to cause the spread of listed plant species. A number of other invasive species were identified on the turbine delivery route and grid connection works areas.

9.5.7. With regard to habitat types, the EIAR states that the main wind farm site encompasses a mixture of habitats with conifer plantation (WD4) dominating. Access

tracks categorised mainly as buildings and artificial surfaces (BL1) and to a lesser extent spoil and bare ground (ED2) / recolonising bare ground (ED2) mosaic provide access throughout the site. Dry meadows and grassy verges (GS2) are present along several lengths of access tracks. Pockets of recently-felled conifer woodland (WD4), dry siliceous heath (HH1)[3], scrub (WS1) and improved agricultural grassland (GA1) are also present. Hedgerow (WL1) / treeline (WL2) mosaic is limited and associated with improved agricultural grassland (GA1) within the main wind farm site.

9.5.8. With regard to the nature of the heath habitat, which is present in two areas (Area A in the eastern portion of the site and Area B to the north of the site (i.e. outside of the site boundary)) it is stated that Juniper was not present within the heath habitat and therefore the heath habitat on site cannot correspond with Annex I 'Juniperous communis formations on heaths or calcareous grasslands (5130)' habitat. Whilst the habitat on site is dry heath, it is stated that relevé results confirms that it does not correspond with Annex I habitat 'European dry heaths (4030)' as the habitat contains limited floral diversity with an immature moss ground layer with lichen completely absent from the ground layer. Also, Bracken (both areas) and Bramble (Area B only) is invading the habitat and no sign of grazing are found. It is stated that due to the habitat's floral composition and current condition as well as its limit in area it is not deemed to be of National Importance. However, it is considered to be of County Importance as it is uncommon and potentially provides important habitat for foraging and breeding Snipe and Red Grouse. The other habitats are considered to be of Local Importance.

9.5.9. A total of 12 No. terrestrial mammal species were identified within the study area, including Badger, Bank Vole, Brown Rat, Eurasian Rabbit, Feral Goat, Hedgehog, Irish Hare, Otter, Pygmy Shrew, Red Fox, Sika Deer and Wood Mouse. It is noted that other mammal species previously recorded in the area but not observed during surveys may also occur, such as Irish Stoat, Pine Martin and Red Squirrel. One active badger sett and two fox dens were identified within the wind farm site.

9.5.10. A review of existing bat roost records found that 7 of the 9 Irish bat species have been recorded within a 30km radius of the site. The main wind farm site is stated to

[3] There are a number of apparent typographical errors in the EIAR which refer to the heath habitat as 'dry calcareous heath (HH2)' or 'dry heath (HH2)'.

be part of a landscape that is of low to moderate suitability for Daubenton's Bat, Whiskered Bat, Brown Long-eared Bat, Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat and Natterer's Bat. It is also stated that the main wind farm site and its environs are of low suitability for Lesser Horseshoe Bat and Nathusius' Pipistrelle.

9.5.11. The results of the 4 No. bat activity surveys carried within the main wind farm site in 2019 are presented in Section 8.3.7.2 of the EIAR and the static detector survey results are set out in 8.3.7.7. The static detector surveys recorded eight species of bats with a total of 40,523 recordings over the 53 nights of surveys. The most commonly recorded species was common pipistrelle, followed by soprano pipistrelle, and Leisler's, with much lower levels of activity of Brown Long-eared Bat, Daubenton's Bat, Nathusius' Pipistrelle, Natterer's Bat, and Whiskered Bat. Brown Long-eared Bat are stated to be present on-site, but potentially under-recorded by the static detectors due to sometimes hunting without echolocating.

9.5.12. With regard to avifauna, a desktop study found a total of 54 species of ecological importance recorded historically in the relevant 10 km grid square. These include 17 species on the then-current Birds of Conservation Concern in Ireland (BoCCI) red list and 30 on the BoCCI amber list. 7 No. of the species are Annex I species under the EU Birds Directive and 5 No. are species which are not rare or protected under Annex I but are included as indicator/keystone species and/or may be sensitive to wind farm development (e.g. Common Buzzard, Eurasian Sparrowhawk, Long-eared Owl, White-throated Dipper and Heron. Peregrine Falcon was not included in the grid square data but NPWS advised of a Peregrine falcon nest 5-10km from the centre of the main wind farm site.

9.5.13. The results of the Vantage Point surveys and walkover surveys for the various target species are set out in Sections 8.3.8.2 – 8.3.8.28 and the results of Transect and Point Count surveys are set out in Table 8-48 of the EIAR. Over the survey period a total of 57 bird species were recorded, of which two are Annex I listed (Merlin, Peregrine Falcon), three are Red listed (Black-headed Gull, Meadow Pipit and Woodcock) and 20 are Amber listed (Common Gull, Goldcrest, Goshawk, Black-backed Gull, Great-spotted Woodpecker, Greenfinch, House Martin, Kestrel, Lesser Black-backed Gull, Linnet, Merlin, Mistle Thrush, Robin, Skylark, Spotted Flycatcher, Sparrowhawk, Starling, Stonechat, Swallow, Swift).

9.5.14. The results of the Vantage Point surveys for non-target species are set out in Table 8-49 of the EIAR. A total of 18 species were recorded, comprising no Annex I species, two Red-listed species (Grey Wagtail and Meadow Pipit) and 16 Amber-Listed species.

9.5.15. With regard to aquatic ecology, both River Lamprey and Sea Lamprey are known from the River Slaney main channel, with the nearest distance by water to a known Sea Lamprey spawning site from the wind farm site being c. 9.9km and to the nearest River Lamprey spawning site being c. 13.3km. Freshwater Pearl Mussel is recorded in the River Slaney channel, with the closest known Pearl Mussel site at a distance of c. 8.5km. White-clawed Crayfish are recorded in the Burren River, a tributary of the River Barrow, while Otter records were widespread throughout the study area including in the River Slaney, Kildavin Stream and River Clody.

9.5.16. Aquatic surveys undertaken in the study area identified 7 No. species of fish Lamprey sp, Atlantic Salmon, European Eel, Brown Trout, Minnow, Stone Roach and Three-spined Stickleback. No Freshwater Pearl Mussel or White-clawed Crayfish were recorded. The majority of sampling sites achieved good status Q4 water quality status. The EIAR notes that the aquatic flora communities present at a number of sites shared links with Annex I habitat 'Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation' (3260) (i.e. 'floating river vegetation'). It is stated that the floating river vegetation community recorded at sites B3 and B5 on the Burren River were considered to be a particularly good representation of this Annex I habitat given the presence of two or more indicator macrophyte species in addition to aquatic bryophytes. Common Frog and Smooth Newt were not observed during ecological surveys, however the drains within the study area offer potential breeding habitat for these species.

9.5.17. In the 'do nothing' scenario, where the proposed development does not proceed, the habitats and species found at the site will likely remain as they are currently.

9.5.18. Section 8.5 of the EIAR addresses the potential impacts of the proposed development on biodiversity. The identified potential significant impacts are as follows:

9.5.19. <u>Construction phase:</u>

- Potential impacts on European Sites are addressed in the NIS.

- Habitats: Long-term Significant Reversible Impact due to the spread of invasive species.
- Mammals (Excl. Bats):
    - Badger: Long-term Significant Reversible Direct Impact if construction/felling were carried out in close proximity to an active sett during the breeding season.
    - Short-term Significant Reversible Indirect Impact due to disturbance,
    - Red Squirrel and Pine Marten: Short-term Significant Reversible Impacts if breeding or resting sites disturbed during clear-felling.
    - Otter: Short-term Significant Reversible Indirect impact due to pollutants/contaminants entering watercourses.
- Bats: No Significant construction phase impacts identified.
- Avifauna: Localised Temporary Significant Reversible Impact on nesting birds due to tree felling and scrub removal during nesting season.
- Aquatic Ecology:
    - Significant Negative Short-Term impacts on aquatic ecology at the local scale, due to tree-felling, turbine base construction and borrow pit excavation.
    - Very Significant Negative, Permanent impacts on Freshwater Pearl Mussel at the National Scale, due to tree-felling and turbine base construction.
    - Significant Negative Short-Term impacts in the Local Context due to turbine delivery route works and grid cable installation, which are not part of the proposed development.
    - Long-Term to Permanent Significant impacts in the context of the Barrow Catchment to White-clawed Crayfish and Very Significant Negative Permanent impacts at the National scale to Freshwater Pearl Mussel due to grid cable installation, which is not part of the proposed development.
- Other Species:

- Short-Term Significant Reversible impact due to interference with actively used amphibian breeding habitat during breeding periods.

9.5.20. Operational Phase Impacts:

- Bats: Long-Term Significant Reversable Impacts at a Local Level due to death by collision and barotrauma.
- Avifauna: No significant impacts identified.
- Aquatic Ecology: No significant impacts identified.
- Other Species: No significant impacts identified.

9.5.21. Decommissioning Phase:

- No significant impacts identified.

9.5.22. Cumulative Impacts

9.5.23. As noted above, the cumulative impacts with the turbine delivery route works and the grid connection works are considered in the EIAR. The EIAR also considers cumulative impacts with regard to the replanting lands in Counties Limerick and Sligo, factories, housing developments, forestry, farming and solar energy developments, as well as the 13 No. operational and 1 No. permitted wind farm within 20km of the proposed development.

9.5.24. In the construction phase, the following potential significant cumulative impacts are identified:

- Significant Negative Cumulative impact on local watercourses, should turbine delivery works at location No. 52 occur in parallel with off-site forestry works, which may in turn affect the integrity of the Blackstairs Mountains SAC.
- Significant Negative Short-Term Cumulative impact on aquatic ecology due to commercial forestry and agricultural practices.

9.5.25. In the operational phase, no potential Significant cumulative impacts are identified:

9.5.26. Mitigation Measures

9.5.27. Mitigation measures are addressed in Section 8.6 of the EIAR. In addition to construction phase, operational phase and decommissioning phase measures, the EIAR sets out various ‘mitigation by avoidance and design measures’ including:

- Hardstanding areas kept to the minimum size necessary to minimise land take of habitats and flora.
- Site design/layout deliberately avoided direct impacts on designated sites.
- All cabling placed underground to reduce collision risk to birds over the lifetime of the wind farm.
- Use of public roads and agricultural lands for the grid connection routes to minimise land take of potentially sensitive habitats with avoidance of hedgerow/treeline removal where possible.
- Use of buffers between wind farm infrastructure and hydrological features such as rivers and streams.
- Avoidance of new stream crossings and use of existing pipe culvert crossings for the design of internal roads.
- Use of directional drilling where the grid connection crosses watercourses and avoidance of in-stream works.
- Design of temporary turbine delivery route works with cognisance to the adjacent Blackstairs mountain pNHA and use of temporary floating construction methodologies.

9.5.28. The proposed construction phase mitigation measures include:

- Project Ecologist/Ecological Clerk of Works (ECoW) with the authority to stop works will be employed for the duration of the construction phase to ensure that the mitigation measures are implemented.
- Works area will be kept to the minimum necessary to minimise disturbance to habitats and flora.
- No disturbance to habitats or flora outside the proposed development area will occur. Machinery and equipment will be stored within the site compound. Designated access points will be established for construction traffic and access to the site will be primarily via the existing local road L2026 Barker's Road.

- Management of the spread of non-native invasive species (Rhododendron ponticum and Spanish Bluebell) via prevention, containment, treatment and eradication. This will include pre-construction survey.
- ***Mammals (Excl. Bats):***
    - Ecologist supervision of vegetation, scrub and hedgerow removal areas prior to and during construction as appropriate to identify any site-specific issues in relation to wildlife not currently present so as to allow appropriate mitigation measures to be put in place.
    - Construction operations will take place predominantly during daylight hours to minimise disturbances. Where night works are necessary, the project ecologist/ECoW shall limit them to sections of the site which avoid sensitive features (e.g. mature treelines).
    - Pre-construction mammal survey will be undertaken. In the event that a Badger sett is encountered then NPWS will be informed and NRA Guidelines for the Treatment of Badgers Prior To the Construction of National Road Schemes will be followed.
    - Consultation with NPWS and seeking of a derogation/disturbance licence to implement mitigation measures prior to construction, if necessary.
    - Controlled destruction of Badger setts within the footprint of the proposed infrastructure under ecological supervision and temporary blocking of setts within tree felling buffers and in close proximity to the development during construction phase. No hard-blocking or sett exclusions will be undertaken during the Badger breeding season (December-June inclusive).
    - Construction of an artificial sett if necessary.
    - Submission of report detailing evacuation procedures, sett excavation and destruction, and any other relevant issues to NPWS.
    - If setts are discovered all works within 30m of the sett shall cease including vegetation clearance, NPWS shall be contacted and a derogation/disturbance licence sought.
    - In the event that a Badger is found injured NPWS and ISPCA shall be contacted and potentially a vet capable of treating the species.

- Where possible, felling of trees in forestry areas will be limited to time periods outside which Red Squirrel may have young in dreys (peak period January to March) and Pine Martens may have young in dens (March and April). If unavoidable then areas to be clear felled will be surveyed in advance by an ecologist to determine whether any occupied dreys/dens are present. A license under the Wildlife Act will be sought as necessary.
- An ecologist will check for the presence of hibernating hedgehog and or young Irish Hare, Pygmy Shrew or Hedgehog as appropriate, prior to vegetation clearance works.
- Outside of the bird breeding season (March 1st to August 31st inclusive) attention will be paid to the removal of vegetation, scrub and hedgerow with regards to leverets, October to March for hibernating Hedgehog and September to October for breeding Pygmy Shrew as is appropriate. Within the breeding bird season and outside of it, attention will be paid to the removal and/or maintenance of dense grassland for breeding hare (all year), pygmy shrew (April to October) and Hedgehog (April to July).

- ***Bats:***
  - 79m buffer zone around any treeline, hedgerow, woodland feature into which no part of the turbine should intrude, in accordance with SNH Guidance.
  - Supervision of vegetation clearance
  - Ecologist/ECoW will supervise areas where vegetation, scrub and hedgerow removal. In the event that an issue arises, the NPWS will be informed and the relevant guidelines will be implemented as appropriate (e.g. NRA guidelines).
  - Treelines and mature trees located immediately adjacent to the line of proposed haul roads will be avoided and retained intact. Any trees and treelines along approach roads and site access tracks will be retained unless felling is unavoidable.
  - Exclusion zone to protect retained trees from root damage.

- Area of hedgerow affected will be reconnected with native species saplings to compensate for the loss of hedgerows currently used by bats.
- Existing hedgerows and semi-natural scrub or semi-natural grasslands within the study area outside of the footprint of the development will be retained and incorporated into the landscaping. Disturbed areas will be allowed to recolonise naturally.
- Avoidance of artificial lighting where possible. Where lighting is required, directional lighting will be used to prevent overspill.
- Pre-construction repeat of survey work if necessary.

- ***Avifauna***
  - Removal of vegetation and scrub outside of the bird breeding season (March 1st to August 31st inclusive).
  - Construction during daylight hours to minimise disturbances to roosting birds, or active nocturnal bird species. Where night-time works are required they will be supervised by the project ecologist/ECoW.
  - Toolbox talks with construction staff on disturbance to key species.
  - Re-instated hedgerows will be planted with locally sourced native species, resulting in habitat enhancement for local species of conservation importance such as meadow pipit.
  - With regard to Kingfisher, the mitigation measures outlined in Chapter 10 (Hydrology and Water Quality) and in relation to Aquatic Ecology will be implemented to prevent the identified indirect impacts to water quality.
  - A re-confirmatory survey (March/April) will be conducted of the proposed turbine locations to assess any evidence of Buzzard, Kestrel, Long-eared Owl, Sparrowhawk and Woodcock activity or taking up new territories.
  - Should any new nests be recorded, works at these locations will be restricted to outside the breeding season or until chicks are deemed to have fledged (following monitoring).

- <u>Turbine lighting</u>

- The use of white lights on the turbines will be avoided as these can attract night flying birds and insects, which in turn can attract bats. Certain turbines will be illuminated with medium intensity fixed red obstacle lights where required by the IAA. Lighting will be fitted with baffles to ensure that the light is directed skywards and will not be discernible from the ground.

- ***Aquatic Ecology***
  - Construction phase mitigation for site drainage as per Chapter 10 of the EIAR. These include measures to prevent run-off erosion from vulnerable areas and consequent sediment release into nearby watercourses to which the proposed development site discharges
  - Tree felling will be the subject of a felling license and associated conditions. Given the sensitivity of aquatic ecological receptors downstream (e.g. Freshwater Pearl Mussel), it is proposed to undertake felling in the spring to facilitate the sowing of grass seeds post-harvest to aid sediment filtration and nutrient absorption.
  - Branch lop-and-top and other debris (brash) from felling areas will be removed within 20m of forestry drains to reduce nutrient seepage.
  - Excavated subsoil material not required for in-site reinstatement will be removed to the designated material storage areas at the borrow pit location which is located away from any watercourses (c.380m from Clashavey River headwaters but with limited, closer (180m hydrological connectivity via small drains on site), in the centre of the main wind farm site, between turbines T2 and T4. The risk of water quality impacts to receiving watercourses via siltation or nutrient release will be further reduced through siltation management at the borrow pit site as detailed in the CEMP.
  - All measures for the protection of water quality within the proposed development site, as detailed in the CEMP, will also protect the aquatic ecology and fisheries value of downstream watercourses.

- ***Other Species***

- If construction proceeds during the breeding seasons of common frog/smooth newt, translocation will be undertaken where active breeding drains are within the development footprint.
- Protection of existing hydrological conditions where drains are adjacent to or within the zone of influence. In the event that the hydrology of existing breeding areas within the zone of influence cannot be maintained, translocation to suitable receptor sites can be used.
- Erection of amphibian fencing for areas which could be occupied by amphibians during the construction period.

9.5.29. The proposed operational phase mitigation measures include:

- Implementation of mitigation measures outlined in Hydrology and Water Quality chapter of EIAR and NIS to minimise and prevent the identified indirect impacts on water quality.
- Continued treatment of invasive species in accordance with the invasive species management plan for as long as they persist within the site.
- ***Bats***
  - No high-risk turbines were identified. Five turbines fell within the range of the 'Moderate to High' risk category (T2, T4, T5, T6 and T7) and the two remaining turbines (T1 and T3) fell within the 'Moderate' risk category. The summarised mitigation is contained in Table 8-76 of the EIAR and repeated below:

Moderate-High Level Bat Mitigation **Applies to T2, T4, T5, T6 and T7**	**Moderate Level Bat Mitigation** **Applies to T1 and T3**
Operate the wind turbines in a manner that reduces the movement of the blades below the cut-in speed (e.g. by feathering the blades).	Operate the wind turbines in a manner that reduces the movement of the blades below the cut-in speed (e.g. by feathering the blades).
Implement a monitoring programme during years 1, 2, 3, 5, 10, 15 and 25 post	Implement a monitoring programme during years 1, 2, 3, 5, 10, 15 and 25 post

construction to ensure that bat activity is at a low level in vicinity of these turbines. Review monitoring results to determine if further bat mitigation measures are required.	construction to ensure that bat activity is at a low level in vicinity of these turbines. Review monitoring results to determine if further bat mitigation measures are required.
Undertake a carcass search during years 1, 2, 3, 5, 10, 15 and 25 post construction of the wind farm to determine whether a higher cut-in speed of the blades is required. Implement cut-in speeds (coupled with carcass search results) where surveillance shows high bat activity levels for High-Risk species.of bat activity levels/monitoring results.	Undertake a carcass search during years 1, 2, 3, 5, 10, 15 and 25 post construction of the wind farm to determine whether a higher cut-in speed of the blades is required.
Implement curtailment where surveillance shows high bat activity levels for High -Risk species (and carcasses are recorded). The curtailment will involve operating the selected wind turbine from 30 minutes prior to sunset to 30 minutes after sunrise at a cut-in speed of 5.5 m/s during specified weather conditions and during the active bat season (April to October).	
Clear and maintain buffer zone free of woodland/trees within 50m of turbine blade tips.	Clear and maintain buffer zone free of woodland/trees within 50m of turbine blade tips.
Maintain immediate area around the wind turbines in a manner that does not attract insects.	Maintain immediate area around the wind turbines in a manner that does not attract insects

- ***Avifauna***
    - A post-construction monitoring programme is proposed during years 1, 2, 3, 5, 10 and 15 with submission of results to the competent authority and NPWS to include:

1. **Fatality Monitoring** to include initial carcass removal trials, turbine searches for fatalities and calibration of recorded fatalities against known predator removal rates to provide an estimate of overall fatality rates.
2. **Flight Activity Survey** during the summer and winter months to include both Vantage Point and hinterland surveys to record any barrier effect for target species and changes in flight heights of key receptors post-construction.
3. **Monthly Wildfowl Census** during the winter period to assess displacement levels, if any, of wildfowl post-construction and to assess overall habitat usage changes within the vicinity of the wind farm.
4. **Breeding Bird Survey** (moorland breeding bird and Common Bird Census) to be repeated yearly between early April to early July to assess any displacement effects such as those recorded on breeding birds. Overall density of breeding birds to be annually recorded.
5. **Breeding Wader Survey** to be repeated yearly April – May – June.

- ***Aquatic Ecology***
    - Surface water run-off mitigation as per Chapter 10 (Hydrology and Water Quality).
    - Maintenance of the drainage system and inspections of the erosion and sediment control measures on site for the first year following construction and annually thereafter.
    - Bunding of transformers to over 110% of the volume of oil within them.

9.5.30. With regard to the decommissioning phase, it is stated that the same mitigation measures will apply as for the construction phase.

9.5.31. Mitigation measures are also set out for the turbine delivery and grid connection works that do not form part of the proposed development before the Board.

9.5.32. Finally, the EIAR considers the vulnerability of biodiversity to major accidents or disasters, such as turbine foundation failure, toppling and landslide. The main possible impacts are considered to be the release of sediment and pollutants into

watercourses, which could negatively impact upon aquatic habitats and species. In order to mitigate these potential impacts, mitigation through design is proposed, including site investigations, slope stability analysis, avoidance of areas mapped as having a high susceptibility to landslides, and design of road and hard standing alignments, cutting, filling and drainage. The risk of fire is also identified, which has the potential to negatively impact biodiversity through the loss of habitats and/or destruction of species. It is proposed to mitigate this through the CEMP, Emergency Response Plan and health and safety training.

9.5.33. Residual Impacts

9.5.34. Residual impacts on biodiversity are addressed in Section 8.7 of the EIAR and those associated with aquatic ecology are tabulated in Table 8-78. The EIAR concludes that, with the implementation of the mitigation measures outlined in the NIS and EIAR (including Chapter 8 Biodiversity, Chapter 9 Lands, Soils and Geology, Chapter 10 Hydrology and Water Quality and the CEMP), there will be no significant residual impacts on biodiversity from the proposed development.

9.5.35. **Assessment**

9.5.36. Further Information

9.5.37. The first party appeal included a response to issues raised by the Development Applications Unit (DAU) of the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media and the results of further ornithological surveys undertaken for summer/breeding season 2020 (appendices 3 and 4 of first party appeal). The first party response to the third party appeals also included a further 'detailed response to biodiversity' (appendix 3 of response) and an addendum to the ornithological assessment to take account of the updated Birds of Conservation Concern in Ireland 2020-2026, which classifies various bird species into green, amber and red lists.

9.5.38. The response to the request for further information also contained additional assessments of the potential impacts on biodiversity arising from the various scenarios within the proposed turbine dimension range.

9.5.39. Habitat Loss

9.5.40. The second reason for refusal stated that the application site and associated study area contains an area of Annex 1 Habitat identified as 'European Dry Heaths [4030]',

forming part of the National Annex 1 European Dry Heath Habitat resource, and that the potential loss of such Annex 1 habitat may affect the habitat's national conservation status which is protected under the Habitats Directive.

9.5.41. The Planning Authority's position appears to be based on the submission by the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, which in turn appears to be informed by a report prepared for the Blackstairs Farming Group in 2015, entitled 'Blackstairs Habitat Mapping and Biodiversity Audit 2015'. That 2015 report is stated to have been prepared to support an application by the Blackstairs Farming Group to obtain government support for a locally led agri-environmental scheme.

9.5.42. There are two areas of heath habitat in question, identified as Areas A and B (see Figure 1 of applicant's appeal). As the applicant notes in their appeal, and contrary to the Department's assertion, the 2015 report identifies only Area B as European Dry Heath. Area A is not identified on the habitat mapping in that report (refer to Figure 2 of the applicant's appeal, which is an extract from the 2015 report). Area B is located outside of the application site and no works are proposed in that area, while it is proposed to locate Turbine T6 and associated hardstanding and a small area of access track in Area A.

9.5.43. Given that Area A is not part of the nearby Blackstairs Mountains SAC (Site Code 000770) for which European Dry Heath [4030] and Northern Atlantic Wet Heaths with Erica tetralix [4010] are the qualifying interests, and that it was not part of the habitat mapping in the 2015 report referred to by the Department, it is unclear how it came to be included in the national resource for this habitat type. I note in this regard that both Areas are included in the relevant dataset for the State's Article 17 reporting to the European Commission on the implementation of the Directive. The related NPWS Report on the Status of EU Protected Habitats & Species in Ireland 2019[4] states that the overall status of European Dry Heath [4030] is 'Bad' and that wind farms are recognised as problems for this habitat type.

9.5.44. The first party appeal contends that the dominant habitat type in both Areas A and B is Dry Siliceous Heath HH1 habitat forming a mosaic to a lesser degree with Wet Heath habitat. They contend that the habitats recorded within the wind farm site do

[4] https://www.npws.ie/publications/article-17-reports/article-17-reports-2019

not correspond to any Annex I habitat, with the applicant's ecologists having considered it against the criteria for both the 4010 and 4030 habitat types. It is stated that every single relevé failed the criteria for assessment of 'good conservation status' for these habitat types. It is therefore contended by the applicant that the heath does not have any legal designation and that there is no obligation or mechanism in place for the landowner to improve the habitat.

9.5.45. The Save Mount Leinster appeal refers to a relatively recent EU Habitat Action Plan for European Dry Heath [4030][5], which notes that this habitat type is one of the two most threatened EU habitat types, and which has the goal of seeking to ensure restoration and maintenance at favourable conservation status of this habitat type in the long term (up to 2030), along with ensuring favourable future prospects in the face of pressures and threats.

9.5.46. It is clear that the condition of the heath on Area A has degraded, to the extent that the applicant contends it no longer meets the criteria for 'good conservation status' for the 4030 habitat type. The reasons for this degradation are disputed, particularly whether it has been exacerbated by burning or forestry management. While Save Mount Leinster contend that there has been no recent burning in the area, I noted charring on numerous trees in the site and vicinity on my site inspection.

9.5.47. Notwithstanding the degraded nature of the Area A heath as outlined by the applicant, given that the area is currently included in the national resource for the European Dry Heath habitat type, I do not consider that this is a matter that can be adequately resolved within the confines of this planning appeal. If the Board is minded to grant permission, I therefore recommend that Turbine T6 and its associated hardstanding and access track be omitted by way of condition in the interests of habitat protection.

9.5.48. Subject to this omission, I consider that the proposed development would not have a significant direct or indirect impact on any European Dry Heath [4030] Annex I habitat. The issue of Appropriate Assessment is addressed separately at Section 10.

9.5.49. With regard to other areas of habitat loss, and the issues around habitat loss and fragmentation raised by third parties, I note that the majority of the site comprises

[5] *EU Habitat Action Plan: Action plan to maintain and restore to favourable conservation status the habitat type 4030 European dry heaths* (2020).

heavily modified and drained conifer plantation habitat (93.35% of the total footprint) which has a low diversity of flora species and is of limited value from a biodiversity perspective. This commercial forestry will eventually be felled regardless of whether the proposed development proceeds and the felling of areas of the plantation to accommodate the proposed development will not result in a significant adverse impact in terms of habitat loss. Similarly, with regard to the loss of a small area of improved agricultural grassland in the vicinity of Turbine T3, and small areas of scrub and verges, I do not consider this a significant impact.

9.5.50. Bats

9.5.51. The second reason for refusal stated that the application did not satisfactorily demonstrate that the proposed development will not adversely impact on Bat populations in the area. This issue was also raised by third party appellants and observers, notably Save Mount Leinster.

9.5.52. ***Bat Surveys***

9.5.53. Save Mount Leinster contend that the surveying undertaken was inadequate as there was a failure to conduct automated surveys in newly cleared areas and to conduct above-canopy automatic static surveys. With regard to the first point, the applicant, in their response to the appeal, note that 5 of the 9 No. detectors were located in either open areas or along forestry edges. The detector locations are illustrated in Figure 8-2 of the EIAR and I note that detector 9 was located in recently felled woodland, while detectors 3 and 4 were located in heath area and an agricultural grassland field, respectively. With regard to above-canopy surveys, this issue relates to Leisler's bats which are high-flying relative to other species. The applicant contends that the loud lower frequency call of this species carries further allowing the static detectors to pick them up and allow Leisler's bat activity to be established. The applicant refers to a scientific paper in support of their position (see Appendix 3 of response submission), however I note that SNH guidance notes the difficulty of inferring above-canopy level activity from ground-based equipment. Notwithstanding this, noting the results of the bat surveys, with Leisler's bat being the third most commonly recorded species (7.9% of total recordings), it would appear that the surveying methodology utilised by the EIAR was robust and sufficient to

allow for an understanding of the occurrence of this species in the area and the likely impacts.

9.5.54. With regard to the bat roost surveys, it is contended by Save Mount Leinster that they were inadequate and not compliant with SNH guidance, which requires roost surveys within 200m plus rotor radius of each turbine. I note that while Chapter 8 of the EIAR refers to the 200m radius, the bat survey report contained in Appendix 8.4 refers to 200m plus rotor radius, albeit that the associated Figure would suggest that a 200m figure was used.

9.5.55. What the SNH guidance[6] states in relation to roost surveys is that:

> "Key features that could support maternity roosts and significant hibernation and/or swarming sites (both of which may attract bats from numerous colonies from a large catchment) within 200m plus rotor radius of the boundary of the proposed development should be subject to further investigation. The search area may need to be extended if there is a high level of habitat connectivity in the surrounding area and this is considered likely to attract bats into the wind farm area from further afield."

9.5.56. The SNH guidance relates to 'key features', and I note that the 2020 bat roost survey of structures encompassed a 300m buffer of an earlier site boundary, which is greater than the recommended 200m plus rotor radius from each turbine. This was further to the 2019 roost survey which inspected all trees within a 200m radius of each turbine location, none of which were identified as having roosting potential for bats. I note that the Bat Conservation Ireland guidance[7] refers to a 200m radius of the site. In addition to the fieldwork, the applicant undertook a comprehensive desktop review of bat records for the area. Only two medium potential roost structures were identified a minimum of 1.8km from the nearest turbine and no confirmed roosts were identified. I am satisfied that adequate bat roost surveys were undertaken by the applicant for the purposes of the EIAR and note that one of the proposed mitigation measures is a pre-construction re-confirmatory bat survey to include roost inspection survey.

9.5.57. ***Collision and Barotrauma Impacts***

[6] NatureScot, 'Bats and onshore wind turbines - survey, assessment and mitigation' (2021).
[7] Bat Conservation Ireland Wind Turbine/Wind Farm Development Bat Survey Guidelines (2012).

9.5.58. The potential for collision and barotrauma impacts on bats was raised by third parties, including in the Save Mount Leinster and the Nearest Neighbours appeals. I note that the issue of barotrauma was identified in the EIAR and it is proposed to mitigate it through the maintenance of a vegetation free buffer zones around each turbine.

9.5.59. In their response to the request for further information, the applicant has outlined the implications of the various turbine sizes within the proposed turbine range on the size of these buffer zones and the associated wooded habitat and linear habitat loss. Regardless of the final scenario chosen, the variation in habitat loss above or below that outlined in the EIAR is negligible.

9.5.60. In order to mitigate collision impacts, the applicant has proposed a range of mitigation measures in addition to the buffer zones as outlined above. This includes the feathering of turbine blades together with increased cut-in speeds. It is noted that these measures have been shown in scientific studies to reduce bat fatalities from 30% to 90%. Save Mount Leinster refer to a number of scientific studies regarding impacts of wind turbines on bat species, including the potential for increased 'edge effect' due to tree felling, which results in an increase in their insect prey in the vicinity of turbines. I consider that this issue has been considered in the EIAR and will be adequately addressed through the outlined mitigation measures.

9.5.61. I also note that a comprehensive suite of monitoring proposals is proposed. This includes bat fatality monitoring at regular intervals over the operational life of the proposed development (including years 1, 2 and 3), monitoring of bat box use and monitoring of hedgerow planting to ensure its viability. The EIAR acknowledges that additional mitigation, including potentially increased cut-in speeds for turbines may arise from this monitoring.

9.5.62. I consider that the EIAR demonstrates an adequate understanding of the bat species and potential for roosts present within the site and its surrounds and has outlined a suitably comprehensive range of mitigation and monitoring measures to reduce the potential impacts on bats.

9.5.63. I am satisfied that, subject to the implementation of the proposed mitigation measures and the monitoring programme, the proposed development will not have a significant negative residual impact on bats.

9.5.64. Birds

9.5.65. ***Disturbance/Displacement***

9.5.66. The Department, in their submission to the Planning Authority, raised concerns regarding the disturbance impact of the proposed amenity trails on ground nesting birds within the site.

9.5.67. Pre-construction bird surveys are committed to in the EIAR and the applicant, in their first party appeal, also proposes to add ground-nesting species such as Merlin, Hen Harrier, Golden Plover, Curlew, Lapwing, Snipe and Red Grouse to the list of species to be surveyed. Where any new nests are recorded, works at these locations will be restricted to outside the breeding season (April-July) or until chicks are deemed to have fledged. In addition, post-construction monitoring is proposed at regular intervals, with a programme outlined in the EIAR.

9.5.68. In their appeal, the applicant also proposes to erect signage instructing walkers to keep dogs on leads during the breeding bird season (March to August inclusive) in order to minimise the potential for disturbance to ground-nesting birds.

9.5.69. Based on breeding surveys, the applicant contends that the species most likely to be affected by disturbance impacts from the amenity trails is Woodcock, as no other ground-breeding waders have been recorded breeding onsite, no Nightjars were detected in any of the surveys, no Hen Harrier winter roosts or nests were recorded. None of the other target species recorded breeding onsite are ground-breeders and consequently, the applicant contends that they are unlikely to be materially impacted by the proposed amenity trail (see Table 8-1 of the first party appeal, which assesses the potential disturbance impact of the amenity trails on the target species). With regard to Woodcock, breeding within the main wind farm site and near the proposed amenity paths was not confirmed, with almost all observations being of birds flying over the site. Consequently, any disturbance effects are highly likely to be minor. This is considered by the applicant to be a Not Significant-Slight impact.

9.5.70. I note that there are already relatively extensive recreational trails within the site, which is referred to as the Kilbrannish Forest Recreation Area and which includes a car park, picnic area and information boards for visitors. It is highly likely, therefore, that the birds present at the site are habituated to a degree of human presence due to both the amenity use and the commercial forestry operations. In my opinion, the

enhanced recreational trail provision, while welcome from an amenity perspective, is unlikely to result in significant numbers of additional visitors beyond the level of use that the site already experiences. There is therefore no reason to believe that the ongoing recreational use of the site in the operational phase is likely to result in any significant additional impact on ground nesting birds. Having regard to the lack of evidence of nesting/breeding of these species in proximity to the amenity trails, I concur with the applicant's assessment that no significant impact is likely.

9.5.71. ***Collision Risk***

9.5.72. Section 8.5.2.5 of the EIAR sets out the conclusions of a Collision Risk Model (CRM), with the detailed modelling report contained in Appendix 8.7 of the EIAR. The CRM was undertaken for 13 No. target species (Buzzard, Peregrine Falcon, Kestrel, Sparrowhawk, Golden Plover, Black-headed Gull, Hen Harrier, Red Kite, Common Gull, Great Black-backed Gull, Lesser Black Backed Gull, Cormorant and Snipe) in accordance with Scottish Natural Heritage guidance. The target species were chosen due to being: recorded within the 500m buffers at rotor swept heights; of conservation concern (red or amber-listed) and/or listed on Annex I of the Birds Directive (2009/147/EC); or green-listed and sensitive to wind farm developments. It is stated that the effective collision risk for the other species recorded but not included for collision risk modelling can be assumed to be zero. With regard to passerines, for example, collision risk is not considered likely to be a significant issue as their breeding activity is generally well below the height of rotor blades.

9.5.73. The response to the request for further information including the results of a re-run of the CRM for various scenarios within the turbine dimension range. In total 7 No. scenarios were modelled and for all target species, across all scenarios, the probabilities of collision with turbines were all < 1 per year. The greatest risk for any species under any scenario was for Black-headed gull, with 0.77 predicted collisions per year (or 23 collisions over 30 years[8]).

9.5.74. Given the negligible differences in predicted increase of mortality rate across the turbine range, the applicant contends that, regardless of which turbine is selected

[8] I note that the CRM provides a number of collisions over 30 years, rather than the 35 year operational life referenced in the development description. Nevertheless, the annual collision rate allows for the total number of collisions over 35 years to be easily calculated, i.e.in the case of Black-headed gull it would be 27 collisions over 35 years.

within the proposed turbine range, the assessment of Slight-Imperceptible Reversible Residual impacts in the Local Context on birds remains unchanged from the EIAR.

9.5.75. I note that the CRM uses various conservative assumptions, such as the inclusion of all flight lines that intersected the 500m turbine buffer for the full observation time (rather than splitting the time inside and outside the buffer) and the assumption that birds take no action to avoid collision, when referenced scientific studies suggest an avoidance rate in excess of 95%.

9.5.76. The methodology used for the CRM exercise was in line with SNH guidance, which is generally utilised for assessing ornithological impacts associated with wind farms and I am satisfied that the proposed development is not likely to result in significant residual impacts on bird species as a result of collision risk.

9.5.77. ***Merlin***

9.5.78. The potential impact of the proposed development on Merlin was referenced in the Planning Authority's reason for refusal, where it was considered that the applicant had not satisfactorily demonstrated that the proposed development will not adversely impact on this bird species.

9.5.79. This issue appears to have drawn on the Department's submission at application stage. The Department's submission queried whether Merlin are breeding in the vicinity of the site, based on the surveys identifying copulating Merlin, and contended that additional information was required to assess the potential impact of the proposed development on Merlin. The potential impact on this species was also raised in third party appeals and observations, including the observation made by BirdWatch Ireland.

9.5.80. The applicant, in their appeal, and in their response to the third party appeals, contend that the assessment of this issue in the EIAR is robust and conclusive and that Merlin are not breeding within the appeal site or within the 500m buffer zone surrounding the windfarm. They note that the observed copulating Merlin was 525m to the south of the closest turbine (T5), i.e. outside of the 500m fight activity zone/buffer zone. Given the close proximity of the copulation site to vantage point VP6 and the results of the monthly Merlin surveys undertaken, the applicant contends that it is likely that, if the pair were nesting nearby, the nest location would

have been further to the south of the proposed wind farm site, with two observations of Merlin flying in and out of forestry to the south of VP6 (i.e. in the opposite direction to the wind farm). Given the lack of further sightings of the pair during the 2019 season, the applicant states that this would indicate that the nest may have failed and that the lack of sightings in 2018 and 2020 would indicate that it was not a breeding territory during those years.

9.5.81. It is notable that, in total, Merlin were only recorded on four occasions over the three summer breeding surveys undertaken in 2018, 2019 and 2020, with all four observations occurring outside the site of the proposed wind farm.

9.5.82. In the first party appeal, the applicant included the results of further ornithological surveys undertaken for summer / breeding 2020, which it is stated were not available at the time of lodgement of the planning application. This records one further sighting of Merlin from vantage point VP2 in an area southeast of the VP, flying over forestry and moorland, and moving in a north-northwest direction, again outside of the wind farm site.

9.5.83. It is clear from the evidence submitted by the applicant in the EIAR, the first party appeal and the response to the third party appeals that extensive and comprehensive vantage point and walkover surveys have been undertaken over three years for the wind farm site and the surrounding area and despite the occasional sighting of Merlin, there is no evidence that Merlin are nesting or breeding within the wind farm site or that the applicant has significantly under recorded the presence of this species. Having reviewed the information submitted and noting the locations of the vantage points and the observed Merlin I would agree that, if the copulating Merlin that was observed outside of the 500m buffer zone had established a nest, it was likely to be located further to the south, further away from the wind farm site. The small number of sightings would also indicate that, if Merlin has successfully established a breeding territory in the wider locality, the wind farm site would not appear to be regularly used for foraging or commuting.

9.5.84. Save Mount Leinster contend that the surveying approach for Merlin was inadequate and that an alternative approach for Merlin in an Irish context has been developed in

the 2010 Pilot Merlin Survey by Lusby et al[9]. That pilot study notes the difficulties in surveying Merlin using conventional techniques, notes the different nesting habits of the Irish and British populations, with Irish birds tending to nest in trees rather than on the ground, and makes recommendations for different surveying and monitoring methods. These points are also made by BirdWatch Ireland in their observation.

9.5.85. The pilot study, by its nature, does not appear to be conclusive and it sets out areas for further study and research. For the purposes of this assessment, I am satisfied that the information on file is sufficient to understand the likely potential impacts on this species.

9.5.86. I note that the EIAR proposes a re-confirmatory survey for certain bird species, prior to construction, and in the first party appeal the applicant proposes to include Merlin in this survey (as well as a number of additional species as addressed above). If any new nests are recorded during this survey it is proposed to restrict works at these locations to outside the breeding season or until chicks are deemed to have fledged.

9.5.87. Furthermore, as noted above, a post-construction monitoring programme is also proposed in the EIAR for years 1, 2, 3, 5, 10 and 15 post-construction.

9.5.88. Having considered the information submitted by the applicant, and the matters raised in the third party appeals and observations, I am satisfied that, with the implementation of mitigation and monitoring, the proposed development is not likely to have a significant residual impact on Merlin.

9.5.89. ***Other Birds***

9.5.90. The Save Mount Leinster appeal also raised the potential impact of the proposed development on a number of other bird species, including Hen Harrier, Peregrine, Golden Plover, Red Grouse, Curlew, Kestrel, Sparrowhawk, Buzzard, Red Kite, Goshawk and Passerines.

9.5.91. With regard to Hen Harrier, Peregrine, Golden Plover, Red Grouse, Curlew and Goshawk, low numbers of these species were recorded during the comprehensive multi-year bird surveying undertaken and there is no evidence of the site being an important breeding, foraging or commuting habitat for the species. I am satisfied that

[9] Assessing the effectiveness of monitoring methods for Merlin Falco columbarius in Ireland: the Pilot Merlin Survey 2010.

the proposed development is not likely to have a significant impact on these species during the construction phase. With regard to the operational phase, as noted above collision risk modelling has been undertaken and there is likely to be no significant impact on any of these species as a result of collision with the wind turbines.

9.5.92. With regard to Kestrel, this has been upgraded from an 'amber-listed' species to a 'red-listed' species in the most recent update to the Birds of Conservation Concern in Ireland (BoCCI). The applicant's response to the third party appeals provides an update of the EIAR assessment for this species. It is now considered that, in the absence of mitigation, the proposed development could have a Moderate to Significant impact on this species as a result of habitat loss and/or disturbance. No change to the significance of the potential operational phase collision risk impact is identified (i.e. it remains Long-term Imperceptible).

9.5.93. With regard to Red Kite, this species has also been upgraded from amber to red-listed in the BoCCI update. The applicant's response submission updates the EIAR assessment for this species. There was no record of this species breeding at the appeal site and the number of sightings was low. No significant impact on this species is anticipated. I concur with this assessment but recommend that, if the Board is minded to grant permission, that it add the species to the list of re-confirmatory surveys, given the increased level of conservation concern for this species.

9.5.94. It appears that Buzzard and Sparrowhawk utilise the site and may be breeding in or near the site. The applicant notes that Sparrowhawk have been downgraded from amber to green-listed in the BoCCI update, lessening their sensitivity. Both species exhibit a low fatality rate from collision with wind turbines as evidenced by International studies and are not likely to be significantly impacted in terms of habitat loss or disturbance.

9.5.95. The applicant has proposed to add a number of additional species to the pre-construction re-confirmatory survey that forms part of the mitigation. While Kestrel was already one of the identified species, it is proposed to add Merlin, Hen Harrier, Golden Plover, Curlew, Lapwing, Snip and Red Grouse and to include the proposed amenity loop in the study area. As noted above, I recommend that Red Kite be added to this list, should the Board be minded to grant permission.

9.5.96. I also note that a comprehensive post-construction monitoring programme is proposed, which will include fatality monitoring, flight activity surveys, wildfowl census, breeding bird and breeding wader surveys at regular intervals.

9.5.97. ***Migratory Birds***

9.5.98. The potential impact of the proposed development on migratory birds was also referenced in the Planning Authority's reason for refusal, where it was considered that the applicant had not satisfactorily demonstrated that the proposed development will not adversely impact on migratory birds protected under the EU Birds Directive.

9.5.99. This issue again appears to have drawn on the Department's submission at application stage. The Department's submission contended that additional information was required to assess the potential impact of the wind turbines on migratory birds such as Greenland White-fronted Geese, given that they fly at altitudes generally greater than 100m and since migratory birds are known to lose height during foggy or overcast conditions, which may bring flocks previously flying above turbine height into the collision risk zone. This issue was also raised by third parties.

9.5.100. The applicant, in their appeal, contends that the bird surveys undertaken adhere to SNH guidance and are adequate for assessing the potential effects on general bird migration and passage migrants. They note that, with a total of 7 turbines, the proposed development would fall within the category of a small wind farm and that it is located inland in a land locked county with no SPAs within 20km of the site. They note that vantage point surveys were carried out over three summers and three winters across six vantage points encompassing the site, the 500m buffer and some wider areas, in excess of the requirements of the applicable SNH guidance, which recommends at least two years of surveys. The applicant contends that the surveys would have detected any diurnal flights from migratory species during the peak migration periods of March/April and September/October and that the proportion of surveys carried out at dawn or dusk would have recorded a proportion of species that migrate at night. A number of summer and winter hinterland surveys were also carried out and no large passage migrants (such as swans or geese) were recorded, with the habitats surrounding the proposed wind farm considered not to be generally suitable for passage migrants.

9.5.101. The closest SPA is the Wexford Harbour and Slobs SPA (Site Code 004076), which is located c. 22.3 km southeast of the proposed wind farm and designated for Berwick's Swan, Whooper Swan and Greenland White-fronted Goose. None of these species were recorded during the on-site or hinterland bird surveys. The applicant references a scientific paper indicating that Berwick's Swans migrate from Ireland to Siberia via Denmark, Poland and Finland and contends that they are therefore unlikely to fly from any of the nearby SPAs over the appeal site since their migration route takes them east over the Irish sea. I concur with the applicant's assessment for this species and consider that they are highly unlikely to incur any collision risk from the proposed wind farm.

9.5.102. With regard to Whooper Swan, the appeal site is outside the core range of the birds wintering at Wexford Slobs (less than 5km). A referenced study of the Iceland population of Whooper Swans in Britain and Ireland notes that Carlow has few wetlands and its primary resource is the River Barrow. The referenced study also notes that very few Whooper Swans have been recorded in Carlow in recent years.

9.5.103. The applicant notes a number of studies indicating a low level of collision mortality for both swans and geese, including an international review of swan and goose fatalities at wind farms which found that only 2 Whooper Swans, 3 White-fronted Geese and 1 Brent Goose were recorded as fatalities from monitoring undertaken at 46 different wind farms across 8 countries. Other studies are referenced which indicate Swans adjusting their flight paths for the presence of turbines during both light and darkness, while radar studies on both offshore and coastal wind farms in Europe recorded macro-avoidance rates in wildfowl at least as high, or higher at night than during the day.

9.5.104. With regard to Greenland White-fronted Geese, the majority of which, in Ireland, winter at Wexford Slobs, tracking studies are inconclusive. This is stated to be due partially to the frequency at which their GPS position is logged, with some taking a direct north west route to Iceland/Greenland and others taking a more circuitous route. The direct route to Iceland would appear to be the most commonly used route, and the applicant notes that the species can climb to altitudes in excess of 3,000m during migration flights and can cover the distance between Iceland and Ireland in under 17 hours.

9.5.105. In addition to the very high altitudes of the migrating birds, I note the SNH Guidance on the collision risk for Geese, which is referenced in the first party appeal. It recommends an avoidance rate of 99.8% when conducting collision risk modelling and states that "all the lines of evidence point to a single, consistent conclusion which is that geese do not collide with wind farms in numbers that are of conservation concern". The applicant provides further evidence of the ability of geese to avoid wind turbines with reference to a study undertaken in Bulgaria, which concluded with 99.9% certainty that the avoidance rate of the similar Greater White-fronted Goose present at that site was over 99.9%, based on zero mortality. The report also concluded that the species of geese present at that site appear to have a near perfect ability to avoid collision with rotating wind turbine blades.

9.5.106. In conclusion, noting: the distance of the site from the nearest SPAs and outside the core range of birds wintering at Wexford Slobs SPA; the lack of known foraging areas for migratory bird species in the vicinity; the results of the three years of bird species; the evidence of the high ability of swans and geese to avoid wind turbines; and the provision of night-time aviation lighting on the turbines, I am satisfied that the proposed development is not likely to have a significant adverse residual impact on migratory birds, including those that are protected under the EU Birds Directive.

9.5.107. ***Adequacy of Bird Surveys***

9.5.108. Save Mount Leinster contend that the vantage point (VP) surveys undertaken were inadequate and non-compliant with SNH guidance ('Recommended bird survey methods to inform impact assessment of onshore wind farms' (2017)). The applicant responded to this issue at Section 1.1.14 of Appendix 3 of their response to the third party appeals. Having reviewed the relevant SNH guidance and having considered the positions set out by both parties, I concur with the applicant that the VP surveys were generally consistent with SNH guidance. It appears that Save Mount Leinster have misinterpreted a number of aspects of the guidance document. I note, for example, that the SNH guidance does not rule out VPs being located within the survey area and I consider that the applicant has provided a compelling argument for the selection of the VPs. Neither is there a requirement for VPs to be located 500m from each turbine location, as suggested by Save Mount Leinster.

9.5.109. While there appear to have been some minor deviations from the SNH guidance, such as the simultaneous use of VP2 and VP3 for a number of watches in Winter 2017/18, there is no reason to believe that this undermines the adequacy of the surveying programme, since the extent of surveys would be in excess of the minimum required under the SNH guidance even if these overlapping watches were excluded.

9.5.110. Save Mount Leinster also noted tree felling/clearance at the site in recent years during survey periods and query the effect of this on the robustness and accuracy of the baseline assessment. The applicant, in their response to the third party appeals, identify the areas where felling occurred, the timing and duration of felling activities and identify the relevant VPs covering the areas (see Table 1 of Appendix 3 of the response submission). A total of 27.13 ha was cleared across four areas over the period 2017-2020, with felling in two of these areas being completed six months before the first bird surveys were carried out. Felling in the other two areas overlapped to a degree with VP watches, however even excluding the results of these watches, the total number of VP watches for each of the affected VPs remains well above those recommended in the SNH guidance.

9.5.111. I am therefore satisfied that the Vantage Point surveying undertaken was adequate for the purposes of the EIAR and that it gives an appropriate level of baseline information on the bird species utilising and traversing the site.

9.5.112. <u>Mammals (Excl. Bats)</u>

9.5.113. The EIAR identifies potential direct and indirect significant impacts, prior to mitigation, on Badger, Red Squirrel, Otter and Pine Marten during the construction phase due to displacement and disturbance and water quality impacts in the case of Otter. No significant impacts are predicted for other mammal species and no significant impacts are identified for any mammals in the operational phase, due to the low level of activity associated with the proposed development and the existing level of disturbance associated with the commercial forestry operation. No significant impacts are identified during the decommissioning phase due to their limited scope and duration.

9.5.114. Mitigation measures include the ecological supervision of vegetation removal, pre-construction mammal surveys, day-time working to minimise disruption,

restricting felling operations to outside the breeding periods for Red Squirrel and Pine Marten (with pre-felling surveys where unavoidable). With regard to Badger, a suite of mitigation measures are proposed, in addition to the general mitigation measures, including compliance with the 'NRA Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes', the obtaining of a derogation/disturbance licence from the NPWS if required, temporary hard-blocking of setts in felling areas and in close proximity to proposed infrastructure and the implementation of buffer zones as required. The EIAR commits to taking no actions to exclude Badgers from active setts during the breeding season (December - June inclusive).

9.5.115. Save Mount Leinster contend that the mammal surveys undertaken were inadequate in duration and scope. I consider that they were adequate for the purposes of the EIAR and, as noted above, pre-construction mammal surveys are also proposed to reconfirm the existing receiving environment and to identify any changes, such as new badger setts etc.

9.5.116. I consider that the proposed mitigation and monitoring proposals for mammals are comprehensive and subject to compliance with these measures, I am satisfied that the proposed development is not likely to have significant residual adverse impacts on these mammal species.

9.5.117. Aquatic Ecology

9.5.118. The potential for significant impacts on aquatic ecology is primarily associated with the construction phase and relates to potential water pollution and contamination with siltation, hydrocarbons, concrete or resulting from tree felling. The potential impacts on aquatic ecology associated with tree felling, turbine construction, borrow pit excavation are assessed as being Significant Negative impacts in the absence of mitigation. Potential significant impacts are also identified for the turbine delivery route works and grid connection works which do not form part of the proposed development before the Board. No potential significant impacts are identified in the operational or decommissioning phases.

9.5.119. While Inland Fisheries Ireland (IFI) did not make an observation, I note that in their EIAR scoping response they advised the applicant of the sensitivity of the receiving watercourses from a fisheries perspective, with the Clody, Clashavey and

Burren all being important salmon spawning systems and supporting stocks of trout, lamprey and freshwater pearl mussel in the Slaney system. The IFI noted the potential of the proposed development to result in soil erosion and suspended solids in runoff, leading to contamination or siltation of the receiving watercourses.

9.5.120. A range of mitigation measures are proposed, including buffer zones from watercourses, felling of trees during Spring and in compliance with a felling licence and Forestry Service guidance, compliance with the CEMP, erosion and sediment control measures, biosecurity measures to reduce risk of spreading pathogens and invasive species, etc. No significant residual impacts are anticipated.

9.5.121. I consider that the proposed mitigation and monitoring proposals for aquatic ecology as outlined in the Biodiversity and the Hydrology chapters of the EIAR are suitably detailed and comprehensive. Subject to implementation of the identified measures, and an enhanced monitoring regime, as outlined in Section 9.7 of this report, I am satisfied that the proposed development is not likely to result in significant residual adverse impacts on aquatic ecology.

9.5.122. Invasive Species

9.5.123. Two invasive species were observed within the main wind farm site, Rhododendron ponticum and Spanish bluebell. The EIAR sets out mitigation measures for the control and eradication of these species within the site, as set out in the Invasive Species Management Plan (ISMP) included at Appendix 8.5. This includes a pre-construction survey to establish if the species have spread and the ongoing treatment of the species for as long as they persist within the site during the operational phase. The ISMP also contains measures for the control of invasive species on the grid connection route and the turbine delivery route.

9.5.124. Save Mount Leinster raise concerns regarding the spread of invasive species, particularly along watercourses. I would note that, should the proposed development not proceed, it is reasonable to assume that the identified invasive species will continue to spread in the absence of any active intervention.

9.5.125. The EIAR and associated ISMP acknowledge the potential water-borne route for spreading these species and I am satisfied that the measures outlined in the EIAR and ISMP are standard good practice measures for the control and eradication

of non-native invasive species and, once implemented in full, will adequately avoid or control the spread of the identified species.

9.5.126. Other Biodiversity Related Issues

9.5.127. ***Environmental/Ecological Clerk of Works***

9.5.128. The role and duties of the proposed Environmental Clerk of Works was queried by Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media in their submission to the Planning Authority. They also queried if this was the same person as the Ecological Clerk of Works referenced in the CEMP and Biodiversity chapter. In the first party appeal, the applicant clarifies that it is proposed to appoint both an Ecological Clerk of Works and an Environmental Manager and they set out the roles, responsibilities and duration of the ECoW position. I am satisfied that the applicant has adequately clarified this issue and that the proposals to have separate persons in charge of implementation of environmental mitigation and monitoring and ecological mitigation and monitoring is acceptable.

9.5.129. ***Aviation Lighting***

9.5.130. The issue of aviation lighting was raised in the Department's submission to the Planning Authority. I consider that this is fundamentally an aviation safety requirement and it would not be appropriate for the Board to require a particular type, colour or intensity of lighting by way of condition in the absence of specific advice from the IAA. Given the large number of existing wind farms in the surrounding area, including the adjacent Greenoge Wind Farm, there is no substantive reason to believe that aviation warning lights on the proposed turbines would result in a significant risk to birds or bats.

9.5.131. Conclusion

9.5.132. I have considered all of the written submissions made in relation to biodiversity and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on biodiversity can be avoided, managed and/or mitigated by measures that 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 impacts on biodiversity.

9.6. **Land, Soil, Water, Air and Climate – <u>Land and Soil</u>**

9.6.1. Land, Soils and Geology are addressed in Chapter 9 of the EIAR.

9.6.2. Land and soil desk studies, field surveys and site investigations were undertaken. This included peat depth probing and slope stability assessment and numerous rotary boreholes and trial pits at key locations.

9.6.3. GSI bedrock geology map shows that the main wind farm site is underlain by the Maulin Formation, which is described as dark blue-grey slates, commonly laminated with pale siltstones; metamorphosed to phyllites and schists with sillimanite, garnet, staurolite, andalusite and biotite in granite aureole. Part of the site, extending in a roughly triangular shape from turbines T5 to T4 to south of T7 is underlain by Ballybeg Member, which is described as grey metagreywacke psammites and semi-pelitic schists interbedded with dark blue-grey pelitic schists and phyllites. To the west and north west of the site there are streaks of Equigranular Granite. There is one main fault-line within the site boundary, this trends north to south and is located at the eastern junction between the Maulin Formation and the Ballybeg Member. Site investigations found weathered bedrock at depths ranging from 0.35m to 2.3m BGL, with intact bedrock encountered at between 2.0m to 3.4m BGL. Where intact bedrock was encountered it was generally as medium strong to strong thinly foliated fine-grained shale.

9.6.4. Groundwater Vulnerability within the main wind farm site is mostly classified as 'X – Rock Near Surface', with localised areas of 'High' to 'Extreme' vulnerability. Based on the GSI aquifer vulnerability mapping, overburden deposits are generally <3m deep across the majority of the site.

9.6.5. The majority of the wind farm site, including all proposed turbines, is located within the Ballyglass Groundwater Body (GWB), while the western portion is within the New Ross GWB. The aquifer classification at the wind farm site is LI (Locally important aquifer – bedrock which is moderately productive only in local zones).

9.6.6. There are no Public Water Supplies, Public Supply Source Protection Areas or Group Water Schemes within the boundary of the wind farm site, with the closest such groundwater supply sources being in excess of 4km from the site. GSI data identifies 16 No. groundwater wells within 1km of the site, although the EIAR notes

that it is probable that there are additional wells in the area, associated with houses, which are a minimum of 750m from turbine locations.

9.6.7. There are no recorded geological heritage features within the site. The closest such site is located c. 2km north of the site at Aclare and comprises the largest lithium bearing pegmatite deposit in the Leinster Region. There are also a number of quarries in the surrounding area, none of which are in the vicinity of the proposed development. It is noted that the GSI aggregates database indicates a very low to low potential for crushed rock or granular aggregate at the site.

9.6.8. Site investigations found that peat deposits are limited in extent and thin with typical thicknesses of between 0.1 –0.3m. These topsoil/peat deposits overlay cohesive glacial till deposits and weathered shale, with competent shale bedrock encountered at depths of between 2.0m to 3.4m BGL. Groundwater was not recorded in rotary boreholes at turbine locations or at the proposed borrow pit location, while minor shallow (perched) groundwater seepage was noted in one trial pit (TP02) at a depth of 0.6m.

9.6.9. With regard to the site topography, it is noted that the moderate slopes in the southern portion of the site fall to the south with typical elevations of between 400m to 300m AOD and slopes of between 7 to 14 degrees. The slopes in the central and northern portion of the site fall to the north, again with typical elevations of between 400m to 300m AOD and gentle to moderate slopes at proposed turbine locations with maximum slope angles of 14 degrees. Slopes at the proposed borrow pit are stated to be in the order of 8-10 degrees sloping to the north.

9.6.10. The GSI landslide susceptibility database locates the site within an area generally of ‘moderate’ susceptibility. The EIAR states that no evidence of slope instability was observed and that there are no historical records of landslide activity in the vicinity of the site. Given the absence of significant deposits of soft ground and the shallow depth of bedrock (0.3 to 3.4m BGL at turbine locations), the applicant’s slope stability assessment considers the slopes stable in the long-term drained conditions.

9.6.11. With regard to the issue of peat stability, a risk assessment was carried out in accordance with the Scottish Executive – Peat Landslide Hazard and Risk Assessments (2017), wherein the potential for a landslide risk is defined as the following:

- Peat is present at the development site in excess of 0.5 m depth, and;
- There is evidence of current or historical landslide activity at the site, or;
- Slopes > 2° are present on-site, or;
- The works will impinge on the peat covered areas and cannot be relocated to avoid peat covered areas.

9.6.12. As the peat deposits at the site are relatively thin (max. 0.3m thick, average thickness 0.15m) a peat stability assessment was not undertaken.

9.6.13. Potential impacts are outlined in Section 9.5 of the EIAR for both construction and operational phases. Under the 'do-nothing' scenario, the current land uses will continue and the impacts on land, soils and geology would remain unaltered.

9.6.14. During the construction phase, potential direct impacts primarily relate to felling of coniferous forestry, earthworks, slope stability, construction of roads and hardstandings, borrow pit excavation, cabling works, and the grid connection and turbine delivery route works.

9.6.15. The nature of the potential impacts are related to soil compaction, soil erosion, slope failure, soil/groundwater contamination and sediment/nutrient run-off to surface waters and the EIAR considers the significance of these impacts, prior to mitigation to range from imperceptible to moderate.

9.6.16. Potential indirect impacts are associated with the need for aggregates and licenced waste disposal for unsuitable excavated material. These impacts are not considered to be significant.

9.6.17. In the operational phase the potential for direct or indirect impacts on land, soils and geology are limited, and generally relate to potential hydrocarbon or other contaminant leakage from vehicles or transformers and the need for small amounts of granular material to maintain access tracks. These impacts are considered to be of imperceptible significance.

9.6.18. <u>Cumulative Impacts</u>

9.6.19. With regard to cumulative impacts, I note that the EIAR considers the potential impacts of the overall project, i.e. including the grid connection and turbine delivery route works which do not form part of the proposed development before the Board.

Potential cumulative impacts are also considered with respect to the existing Greenoge Wind Farm, battery storage facility at Kellistown substation and the forestry replant lands. No significant cumulative impacts on land, soils and geology are identified.

9.6.20. Mitigation Measures

9.6.21. The proposed mitigation measures include mitigation by design and best practice, including site investigations, slope stability assessment and the positioning of turbines and site infrastructure in areas of commercial forestry where the soils are worked and drained and in areas of thinner peat and lower slope gradients. It is stated that all works will be subject to design risk assessment and detailed method statements, with supervision by suitably qualified geotechnical personnel.

9.6.22. Other mitigation measures during the construction phase include compliance with a CEMP, a copy of which is included as an Appendix to the EIAR. The measures include: surface water management; fuel/oil storage and spill management measures; refuelling protocols; retention of excavated overburden on-site for use in bunding and landscaping; use of site-won material for general fill; marking-out of works corridors to minimise soil compaction; backfilling of excavations at soon as possible and avoidance of excavations/earthworks during heavy rainfall events; temporary support of excavations; maintenance of existing forestry drainage outside the site areas; provision of new drainage and settlement ponds; silt fencing; monitoring of water quality during construction; provision of drainage in advance of excavations; draining of surface water away from peat deposits; no blasting of rock; groundwater monitoring; provision of alternative water supply in event wells are impacted; installation of clay plugs at intervals to prevent cable trenches becoming preferential pathways for water flow.

9.6.23. In the operational phase no significant impacts are anticipated, as outlined above, however the EIAR includes mitigation measures for the management of hydrocarbons. These comprise relatively standard good practice measures, such as proper storage of hydrocarbons, removal of waste oils/fluids from site and provision of spill control materials in the refuelling areas.

9.6.24. Mitigation measures during decommissioning will be similar to the construction phase, although it is noted that some impacts will be avoided by leaving some sub-

surface elements in place (turbine bases, access tracks etc.). No mitigation measures are considered necessary to address cumulative impacts, given the lack of potential significant impacts identified.

9.6.25. Residual Impacts

9.6.26. Following implementation of the mitigation measures, no significant residual impacts on the land and soils environment are anticipated as a result of the construction, operation and decommissioning of the proposed development.

9.6.27. **Assessment**

9.6.28. Rock Type

9.6.29. A number of observers contend that the applicant has miscategorised the local rock type as limestone, casting doubt on the applicant's understanding of the receiving environment and the veracity of the assessment undertaken. This would appear to relate to an erroneous statement in section 9.8, 'Conclusions', of the EIAR, that:

> "The subsoils across the proposed project comprise predominantly glacial till derived from limestone bedrock, cutover peat, and limestone derived sand, gravel and alluvium. This was confirmed during the site assessment works."

9.6.30. Notwithstanding this erroneous statement, it is clear from the body of Chapter 9 and the associated geotechnical analysis and site investigation results contained in Appendix 9.1 that the applicant has demonstrated a correct understanding of the receiving environment, has identified the rock as shale and has identified the weathered nature of the rock in certain areas. The presence of thin layers of peat and peaty clay was also identified. On my site inspection, I noted that where bedrock was visible (e.g. along track cuttings), it comprised weathered shale as identified by the applicant.

9.6.31. Land Slippage and Slope Stability

9.6.32. The issue of landslides, slope stability and peat slippage was raised in a number of appeals and observations and photographs of numerous incidents in the area were submitted in support of this. The applicant contends that the photographs show localised slope failures or washout features, caused following heavy rainfall on steep-sided upland sites. I note that the photographs of slope failures/landslides were not taken within the appeal site.

9.6.33. Having reviewed the information submitted by the applicant, including the geotechnical investigation reports, and having inspected the site, it appears that there is very limited extents and depths of peat present within the wind farm site. Where it does occur, it is in the form of a peaty topsoil. The site is also currently primarily in commercial forestry use, with associated drainage in place. Given the lack of significant peat deposits, I do not consider it likely that the site is at significant risk of major peat slippage or bog slides as has occurred at certain other wind farm sites referenced by the third parties which generally featured extensive deep areas of peat.

9.6.34. The potential for low frequency vibrations to cause slope instability or liquefaction of soils was also raised by appellants. I note that the turbine bases will be situated directly on bedrock into which any vibrations would be transmitted and that the proposed hardstandings and access tracks will be constructed of compressed granular fill. Having regard to the nature of the development and these construction characteristics I accept the applicant's assertion that low frequency vibrations from the wind turbines are not likely to result in increased slope instability or liquefaction of soils.

9.6.35. In my opinion, the presence of slopes of thin soil overlying bedrock will always give rise to the potential for localised failures, particularly, as the applicant notes, after heavy rainfall events. The proposed mitigation, as outlined above, includes both mitigation by design and implementation of a CEMP to include measures such as no blasting of rock, avoidance of excavations/earthworks during heavy rainfall events, backfilling of excavations as soon as possible etc. Subject to compliance with the CEMP and implementation of the identified mitigation measures (including design measures), I am satisfied that the proposed development is not likely to result in a significantly increased risk of landslides or slope instability.

9.6.36. <u>Borrow Pit</u>

9.6.37. It is proposed to utilise a borrow pit to generate general fill on-site. Save Mount Leinster, in their appeal, query whether the borrow pit will be capable of supplying stone of sufficient quality for construction use and contend that it will not be able to produce the volume of material stated in the EIAR.

9.6.38. While it appears that the rock is of relatively low quality, with reference to its GSI classification, it is intended to use this site-won aggregate for general fill purposes, such as for access road and hardstanding construction. While the material may be unsuitable for structural use in concrete aggregates etc. there is no substantive evidence before the Board to demonstrate that it would be unsuitable for general fill purposes and access track sub-layers etc. Given the distance of the site from conventional quarries and the narrow roads in the area, I consider the use of a borrow pit to be a sustainable use of local resources which will reduce the need for off-site generated material. The borrow pit void will also provide a location for the placement of excess excavated material.

9.6.39. I note from the Geotechnical Assessment Report contained in Appendix 9 of the EIAR that rotary coreholes drilled at the borrow pit location recorded bedrock at a depth of between 1.7m and 2m BGL. It is also stated in the report that groundwater seepages indicate that the groundwater depth in the borrow pit is at c. 2.6m BGL and that the use of dewatering plant is likely to be required.

9.6.40. Section 9.5.2.2 of the EIAR states that the borrow pit will have a footprint of c. 5,000m^2, providing a potential volume of c. 45,000m^3 of granular fill. It also states that c. 1.5m of overburden will be stripped at the borrow pit to access the underlying deposits. It is proposed to reinstate the borrow pit using spoil excavated on site.

9.6.41. Drawing P1913-0300-0005 'Borrow Pit Plan and Sections' indicates a maximum excavation depth of c. 2.4m east to west and c. 3.3m north to south. Given that the footprint of the borrow pit is c. 5,000 m^2 and that a stated 1.5m depth of overburden has to be removed it is not feasible, in my opinion, that the borrow pit could provide 45,000m^3 of granular fill. I note in this regard, notwithstanding the sloped nature of the site, that a 5,000 m^2 footprint would require excavation to an average depth of 10.5m (allowing for 1.5m of overburden) to provide 45,000m^3 of material.

9.6.42. The Save Mount Leinster appeal estimates a volume of 12,000m^3 based on the sections provided while the applicant, in responding to the appeal, stands over their figures. I note, however, that Section 11.8.2.1 of the EIAR, relating to non-renewable resources, states that the borrow pit will have a capacity of 15,000m^3. This would appear to be a more feasible volume given the dimensions and sections and would be broadly consistent with the estimate by Save Mount Leinster.

9.6.43. It appears therefore, that the applicant would either be required to excavate the borrow pit to a greater footprint or a significantly greater depth than stated in the EIAR, which would have potential impacts in terms of slope stability and groundwater inflow volumes that would require dewatering and disposal, or that they would be required to import more fill material and export more spoil material which would have implications for traffic generation. Should planning permission be granted, the applicant will be bound by the plans and particulars submitted, including the dimensions of the borrow pit. It is reasonable to assume, therefore, that the shortfall of material will be met with additional imports to the site. The traffic implications of this are addressed elsewhere, but I consider the proposed borrow pit use to be acceptable and desirable from an environmental perspective.

9.6.44. Impacts on Wells

9.6.45. It is contended in a number of appeals and observations that the proposed development will result in groundwater contamination and will cause pollution of existing wells in the area or otherwise impact on water supplies.

9.6.46. The EIAR identified 16 No. groundwater wells within 1km of the site. This figure is based on a review of the GSI wells and springs database, and the applicant acknowledges that there are likely to be other wells in addition to those identified.

9.6.47. The EIAR identifies potential impacts on groundwater and wells as a result of reduction in groundwater levels from dewatering of excavations and groundwater pollution due to the removal of overburden and the potential for contamination during construction works or from silt infiltration associated with soil erosion.

9.6.48. The proposed wind turbines will be located a minimum of 750m from any houses with potential domestic wells. Given this considerable separation distance and the relatively shallow and short-term nature of the excavations and associated dewatering required for the turbine bases, there is no reason to believe that there will be a significant impact on groundwater levels. Once the turbine bases have been completed and backfilled, there will be no further pumping and groundwater levels will revert to current levels.

9.6.49. Other excavations, such as for the substation and cable routes will be relatively minor and will be open for relatively short periods.

9.6.50. The potential for vibration-induced contamination of wells was also raised. As the turbine bases will be located directly on bedrock and will be a significant distance from existing wells, it is not likely, in my opinion, that any vibration associated with the operation of the wind turbines would be of a magnitude to result in contamination of wells with shale particles or other naturally occurring minerals.

9.6.51. Save Mount Leinster contend that the Burren Water Treatment Plant, which is stated to be 1km from Turbine T3 will potentially experience severe negative impacts from the development. They do not elaborate on what these impacts will be, but as with the private wells, I do not consider that any significant impact on the treatment plant is likely given the nature of the development and the separation distances.

9.6.52. Soil Compaction, Contamination and Erosion and Groundwater Contamination

9.6.53. The nature of the proposed construction works and associated heavy machinery and materials gives rise to the potential for soil compaction, contamination with fuels, oils, chemicals etc. and erosion of soil due to surface water management. This also has the potential to impact on groundwater.

9.6.54. The EIAR proposes to mitigate these potential impacts through mitigation by design (e.g. positioning of turbines in lower sloped areas of commercial forestry where the soils are worked and drained) and through compliance with a CEMP which includes surface water management measures, fuel/oil storage and spill management measures, refuelling protocols, retention of excavated overburden on-site, marking-out of works corridors to minimise soil compaction and comprehensive drainage proposals. I am satisfied that a suitably detailed and comprehensive range of measures has been proposed to ensure that no significant soil compaction, contamination or erosion impacts or contamination of groundwater will arise as a result of the proposed development.

9.6.55. Chemical Reactions

9.6.56. It is contended that the presence of pyrite, in combination with imported limestone, calcium carbonate and magnesium carbonate with the shale rock on site creates the risk of sulphites impacting on water quality and salmon, lamprey, mussel and other species.

9.6.57. Petrographic analysis of borehole samples was undertaken and is included in Appendix 9.1 of the EIAR. The samples are described as metamorphosed

sandstones composed predominantly of quartz (50%), plagioclase (8%), chlorite (15%) and mica (25%) with subordinate quantities of pyrite (c. 2%). It noted that pyrite along one lamina of one of the samples has been partially replaced by iron oxides possibly as a result of recent weathering.

9.6.58. While pyrite is present in the rock underlying the site, it forms a relatively low percentage of the minerals present and is clearly subject to natural weathering processes, noting the presence of weathered rock in many of the trial pits and boreholes. On my site inspection, I also noted that where rock was visible (e.g. along track cuttings), the shale was clearly subject to natural weathering processes, with the upper layers weathered and delaminating.

9.6.59. On the basis of the information before the Board, there is no reason to believe that the proposed development would result in a significant increase in the risk of sulphites being released in quantities or concentrations that would impact on water quality in their own right.

9.6.60. Conclusion

9.6.61. I have considered all of the written submissions made in relation to land and soil and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on land and soil can be avoided, managed and/or mitigated by measures that 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 impacts on land and soil.

9.7. Land, Soil, Water, Air and Climate – Water

9.7.1. Hydrology is addressed in Chapter 10 of the EIAR.

9.7.2. A desk study, field assessment and water sampling were undertaken to establish existing drainage patterns, hydrological environment and water quality.

9.7.3. The wind farm site is primarily situated within the Slaney_SC_050 (12_8) sub-catchment and more particularly is spread across 5 No. sub-basins. Turbines T1 and T4 are within Clashavey_River_010 - IE_SE_12C00500 sub-basin, Turbine T6 is within Kildavin_Stream_010 – IE_SE_12K040800 sub-basin, while Turbines T2, T3,

T5 and T7 are within Clody_010 – IE_SW_C030080 sub-basin. The westernmost portion of the site is within the Barrow_SC_090 sub-catchment, although no turbines are located in the associated Burren_020 sub-basin.

9.7.4. Surface runoff from turbines T1 and T4 drains to the Clashavey River, which rises to an elevation of 300m OD c. 0.25km south west of turbine T1 and runs in a north eastern direction, joining the River Slaney c. 6.3km north east of turbine T4.

9.7.5. Surface runoff from turbine T6 drains to the Kildavin Stream, which rises to an elevation of 205m OD c. 0.87km north of turbine T6 and flows in a north eastern direction, joining the River Slaney c. 5km to the north east.

9.7.6. Surface runoff from turbines T2, T3 and T5 drains to the Kilbrannish-South Stream and from T7 towards the Kilbrannish-North Stream. Both streams run in a south easterly direction for c. 2.8km, where they join the River Clody. The River Clody flows to the east (incorrectly stated as west in the EIAR) for c. 6.8km where it joins the River Slaney.

9.7.7. There is no record of historical flooding at the wind farm site and OPW PFRA mapping indicates that the site is within Flood Zone C – low risk of flooding.

9.7.8. WFD water quality status and waterbody risk on the northern side of the wind farm is classified as ‘Moderate’ and ‘At Risk’, respectively, while on the southern side, they are classified as ‘Good’ or ‘High’ and ‘Not at Risk’. Q-value biological water quality ratings in the area range from ‘moderately polluted’ to ‘unpolluted’.

9.7.9. Surface water quality monitoring was undertaken at 6 No. locations on three occasions, at weekly intervals to establish baseline conditions. A number of exceedances for nitrate, suspended solids and hydrocarbons were noted.

9.7.10. With regard to environmentally designated areas, it is noted that surface water running off the wind farm site drains into the Slaney River Valley SAC, with no run-off to the closer Blackstairs Mountains SAC.

9.7.11. The existing drainage system is based on collection of surface water in drainage ditches along the access roads, with water from drains discharged overland downslope of the access road. The access tracks are c. 4m with over-the-edge drainage to the roadside drains. The tracks will be widened to 5m and it is stated that

no existing drains need to be diverted due to the proposed development. 8 No. existing crossing points over piped small streams and drains were identified.

9.7.12. The proposed grid connection route, which does not form part of the proposed development before the Board, has also been assessed. It is within 6 No. WFD sub-basins and one recurring flood incident location is located along the grid connection route on local road L2022. It is noted that there will be a maximum of 7 No. watercourse crossings, depending on the route variant chosen. These will primarily be done using horizontal directional drilling methods. Similarly, with regard to the turbine delivery route, there are a total of 14 No. watercourse crossings from the M11-N30 roundabout, none of which will be modified except for the crossing of the Kilbrannish North Stream at the local road L2026, where a temporary bridge is proposed.

9.7.13. Potential impacts are outlined in Section 10.4 of the EIAR for both construction and operational phases. Under the 'do-nothing' scenario, the wind farm site will remain as predominantly forestry for the foreseeable future.

9.7.14. During the construction phase, the potential direct impacts are primarily associated with impacts on water quality in receiving waterbodies and increases in run-off.

9.7.15. The nature of the potential impacts include: increased sediment loading of streams; silt from construction traffic; sediment and nutrient increases due to runoff during tree felling; blockages of drains leading to flooding or allowing silt-laden runoff to enter adjacent watercourses; fuel spillages during refuelling; impacts on flora and fauna in aquatic habitats; contamination with sanitary waste; inappropriate management of excavations and excavated materials leading to loss of suspended solids to surface waters; obstruction of existing overland flow; erosion of roadside drains due to flow velocity; cable trenches could act at a conduit for surface water flows; contamination of receiving waters and groundwater with alkaline runoff due to use of concrete and cement-based products. The EIAR considers the significance of these impacts, prior to mitigation to range from imperceptible to significant (see Table 10-11 of EIAR). The identified potential significant impact relates to the release of suspended solids into watercourses.

9.7.16. During the operational phase, the main potential hydrological impact is the increase in run-off (stated to be 0.077 m^3/s or 0.07%). Due to the revegetation of exposed

surfaces, the risk of sediment release during the operational phase is considered to be negligible. There is a potential risk of hydrocarbon pollution of watercourses due to runoff from trafficked areas but this is considered to be not significant.

9.7.17. The EIAR includes a flood risk assessment which concludes that the main wind farm site will not have a negative impact on flooding risk in the surrounding area.

9.7.18. During the decommissioning phase, the potential impacts are similar to the construction phase, but of a lesser degree as drainage swales would be mature and it is proposed to leave some elements, such as access tracks and turbine foundations in situ. No significant impacts are identified.

9.7.19. Cumulative Impacts

9.7.20. With regard to cumulative impacts, I note that the EIAR considers the potential impacts of the overall development, i.e. including the grid connection and turbine delivery route works which do not form part of the proposed development before the Board. Potential cumulative impacts are also considered with respect to the existing Greenoge Wind Farm, battery storage facility at Kellistown substation and the forestry replant lands. No significant cumulative impacts on water quality and hydrology are identified.

9.7.21. Mitigation Measures

9.7.22. The proposed mitigation measures include mitigation by design, with an appropriate drainage design stated as being the primary mitigation measure. The drainage system design retains existing forest track drainage, provision of interceptor drains upslope of infrastructure with diffuse outfall on the downslope, provision of roadside swales with silt traps, check dams, settlement ponds with overland diffuse outfalls, and silt fencing in strategic locations. It is stated that the site drainage measures will be put in place in parallel with or ahead of construction, with settlement ponds infilled at the end of the construction phase. Drain crossings will be piped with silt protection controls in place. Runoff from the roof of the on-site substation will be collected in a water harvesting tank, and wastewater will be drained to a tank and regularly emptied. The site compound will be surrounded by a shallow swale, with runoff passing through an oil interceptor prior to overland discharge. Site services will comprise portaloos and bottled/tanker water.

9.7.23. Other mitigation measures during the construction phase are outlined in Section 10.7 of the EIAR, and generally comprise good practice measures such as 50m buffer zones from streams, water quality monitoring, appointment of an Environmental Clerk of Works, erosion control measures, refuelling protocols, washing of concrete truck chutes, no batching of concrete or wet cement within the wind farm site, use of weather forecasting prior to concrete pours, provision of spill kits, and compliance with the CEMP, a copy of which is included as an Appendix to the EIAR. With regard to monitoring, it is proposed to take monthly water samples during ground disturbance works.

9.7.24. Specific detailed mitigation measures are proposed for the tree felling operation, prior to the construction of the wind farm access tracks and hardstandings. These primarily comprise enhanced silt and sediment control measures and measures to prevent soil erosion.

9.7.25. Similar mitigation measures are proposed for the grid connection works and turbine delivery route works, which do not form part of the proposed development.

9.7.26. In the operational phase, the main hydrological impact is the increase in run-off which will be mitigated by the drainage system, which will increase time of concentration and decrease peak run-off. Mitigation during maintenance operations will include provision of spill kits, restrictions on refuelling locations, bunding of transformers. The maintenance regime will include inspection of the drainage system, removal of blockages etc. as well as water quality monitoring. No mitigation measures are proposed to address flood risk, as it is contended that the proposed development will have a minimal impact on flood risk in the surrounding area.

9.7.27. Mitigation measures during decommissioning will be similar to the construction phase, although of reduced magnitude, since some elements will be left in place (turbine bases, access tracks etc.).

9.7.28. Residual Impacts

9.7.29. Following implementation of the mitigation measures, no significant residual impacts on the water environment are anticipated as a result of the construction, operation and decommissioning of the proposed development.

9.7.30. **Assessment**

9.7.31. Water Quality Impacts

9.7.32. I consider that the greatest potential for significant impacts on the water environment arises from the potential for suspended solids, pollutants, oils, cement, chemicals etc. to be released into watercourses or groundwater during the construction phase. This issue was raised in numerous appeals and observations and it is contended in the Kinsella appeal that the previous Greenoge Wind Farm construction resulted in chemical or cement contamination of watercourses. This is disputed by the applicant. I note that the board is limited to dealing with the planning appeal before it and it is not a matter for the Board to determine the cause of any previous contamination but rather to determine if the proposed development, alone or cumulatively with other development, is likely to result in significant impacts on the water environment.

9.7.33. The EIAR and associated CEMP set out a range of mitigation measures and pollution prevention measures, as outlined above. The measures include both mitigation by design and other mitigation including provision of roadside swales with silt traps, check dams, settlement ponds with overland diffuse outfalls and silt fencing. Runoff from the on-site substation roof will be collected in a water harvesting tank, and wastewater will be drained to a holding tank and regularly emptied. The site compound will be surrounded by a swale with runoff passing through an oil interceptor prior to overland discharge. The other mitigation proposed generally comprises good practice measures such as 50m buffer zones from streams, water quality monitoring (see additional monitoring proposals below), erosion control measures, refuelling protocols, washing of concrete truck chutes, provision of spill kits and compliance with the CEMP. With particular regard to cement/concrete which is contended to have caused issues during the Greenoge construction, I note that no batching of wet cement products is proposed on the wind farm site and that the applicant commits to pouring concrete during dry conditions.

9.7.34. I note that Section 4.3.5 of the CEMP also sets out emergency response measures to deal with any spillages and that it is proposed to appoint an Environmental Clerk of Works to manage implementation of the CEMP.

9.7.35. The Save Mount Leinster appeal contends that the applicant has failed to meet their proposed 50m buffer zone for Turbine T1 as it is within 50m of a watercourse. The applicant disputes this and having reviewed relevant maps and having undertaken a

site inspection I concur with the applicant's position. As noted in their response to the appeal, Turbine T1 is c. 300m east of the River Clashavey and c. 350m from the Aclare stream.

9.7.36. Save Mount Leinster contend that the proposed development will result in increased acidification of watercourses as a result of tree felling and the release of pine needles which, it is stated, contain nitric and sulphuric acid from atmospheric pollution. Save Mount Leinster have not provided any scientific evidence in support of this position, however I note that, regardless of whether or not the proposed wind farm proceeds, the commercial forestry on the site will be felled at some stage in the future. There is therefore no reason to believe that the proposed development, in and of itself, will result in significant acidification of watercourses.

9.7.37. Save Mount Leinster also note concerns raised by Inland Fisheries Ireland (IFI) during scoping and consultation regarding excavations and the borrow pit and the associated potential for suspended solids pollution and runoff as well as IFI's desire "that no soil erosion occurs rather than employment of mitigation measures". I note that IFI did not make a subsequent submission on the planning application or the appeals. In my opinion, any substantial excavations in soil on an elevated sloping site is likely to give rise to the potential for soil erosion or runoff containing suspended solids. I do not consider that it is feasible to eliminate any potential for such impacts to arise, and I instead consider the applicant's proposed approach of utilising good practice construction methods and specific mitigation measures, including mitigation by design (such as the proposed drainage system), to be a reasonable approach to addressing these potential impacts.

9.7.38. I am satisfied that the applicant has proposed an appropriately comprehensive range of mitigation measures and subject to the implementation of these measures and an appropriately robust monitoring regime (see following section), I am satisfied that the potential impacts of the proposed development on water quality can be adequately mitigated and that the proposed development will not have a significant residual impact on water quality.

9.7.39. <u>Water Quality Monitoring</u>

9.7.40. While the EIAR proposes monthly water quality monitoring during the construction phase, the Development Applications Unit (DAU) submission to the Planning

Authority advised that monitoring would need to be far more frequent, in particular for suspended solids parameters, and that monitoring should extend considerably beyond landworks. The applicant, in Appendix 3 of their first party appeal, respond to issues raised by the DAU and Carlow County Council and provide additional clarity and further measures. With regard to the water quality monitoring programme, they now propose to undertake baseline sampling prior to construction works, with sampling then undertaken on a weekly basis during construction, continuing for 3 months following completion of the wind farm. It is also proposed to undertake daily visual inspections of the site drainage network, silt traps, settlement ponds and watercourses within and around the site. Additional monitoring is also proposed following periods of heavy precipitation to ensure attenuation and silt arrest measures remain effective.

9.7.41. I agree with the DAU that the applicant's original monitoring proposals were inadequate to ensure that the mitigation measures adequately protect water quality and aquatic biodiversity. However, I consider that the revised proposals set out in Appendix 3 of the first party appeal adequately addresses this issue and that the revised monitoring regime would be sufficient. Should the Board be minded to grant permission, I recommend that the applicant be required to incorporate the revised monitoring programme into the CEMP.

9.7.42. Increased Run-off and Flooding

9.7.43. A number of appeals and observations contend that the proposed development will result in increased levels of run-off with associated implications for slope stability and flood risk. In particular I note the Kinsella appeal, which contains considerable detail about recurrent flooding issues and surface water run-off issues that have affected the appellant's property and farm. The appellant contends that this is as a result of the construction of the Greenoge Wind Farm and she expresses concern that similar issues will arise as a result of the proposed development.

9.7.44. As noted by the applicant, there is only one turbine (T6) within the catchment within which the appellant's property is located, and it is at a distance of c. 1.1km. The appellant's property has clearly suffered from previous flood events, as evidenced by her photographs and submissions, and while she is understandably concerned about the impact of the proposed development, there is no reason to believe that the

proposed development will result in any increased flood risk to her property during construction or operation.

9.7.45. The proposed drainage design is based upon the retention and dispersal of surface run-off, rather than via concentrated point discharges to watercourses. It is intended to achieve this via swales, settlement ponds and a number of diffuse outfalls. I consider that this approach will be beneficial in terms of reducing flood risk and spreading the increased runoff over a larger receiving environment. It is notable in this regard that, due to the large size of the site, surface water runoff will drain to five sub-basins. Table 10-10 of the EIAR sets out the runoff to each sub-basin and indicates that the increase in runoff for a 1 in 100 year storm event to each of the sub-basins will be minimal, with an overall increase in peak runoff of 0.077m^3/s. The total capacity of the proposed swales is 4,130m^3, which is substantially greater than the 827m^3 of additional runoff during a 6 hour storm duration.

9.7.46. Having regard to the proposed drainage design and the characteristics of the receiving environment, I am satisfied that the proposed development is not likely to result in a significant increase in surface water run-off or a significant increase in flood risk.

9.7.47. Conclusion

9.7.48. I have considered all of the written submissions made in relation to water and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on water can be avoided, managed and/or mitigated by measures that 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 impacts on water.

9.8. **Land, Soil, Water, Air and Climate – Air and Climate**

9.8.1. Air and climate are addressed in Chapter 6 of the EIAR.

9.8.2. The application site is located in a rural area, with the village of Myshall c. 1.5km to the north west, the village of Kildavin c. 4km north east and the town of Bunclody c. 5.5km to the east. Land uses in the area generally comprise commercial forestry and agriculture, with areas of peat bog. Air quality sampling was not undertaken, on the

basis that the receiving environment is expected to have good air quality due to the lack of heavy industry etc. in the area. I consider this to be a reasonable assumption. The EIAR focusses on the potential emissions to air during the construction and decommissioning phases, since there will be no emissions during the operational phase.

9.8.3. The EPA Air Quality Index for Health mapping shows the current air quality in the area as 1 – Good. Air quality monitoring results for the nearest EPA monitoring station in Carlow Town indicate that the only parameter to be exceeded on a number of occasions was particulate matter (PM_{10}).

9.8.4. In the do-nothing scenario, there will be change to local air quality or microclimate, however there will be an increase in greenhouse gas emissions at a national level if increasing electricity needs are not met by alternative renewable energy sources.

9.8.5. During the construction phase, air quality impacts will primarily be associated with dust emissions, including particulate matter ($PM_{2.5}$ and PM_{10}), due to site clearance, earthworks, tree felling, excavations, material movement and loading/unloading etc. NRA guidance[10] indicates that dust arising from 'major-size' construction sites can result in soiling effects at up to 100m from the source, with PM_{10} deposition and vegetation effects occurring up to 25m from the source. These distances assume that standard mitigation is in place. The nearest sensitive receptor is c. 984m from the site boundary and therefore it is considered unlikely, once mitigation is in place, that any receptors will be affected by soiling, deposition or vegetation effects during construction. With regard to emissions from construction vehicles and plant, given the distances between source and receptor, impacts are stated to be imperceptible. The associated grid connection works, which do not form part of the proposed development before the Board, are stated to have a short-term temporary and slight effect as a result of possible soiling and vegetation deposition along the route, resulting from the 'rolling' construction site.

9.8.6. During the operational phase, there will be no significant direct emissions to air. A diesel generator will be located at the site but will only be used as a back-up emergency power supply and emissions will be infrequent and imperceptible.

[10] Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes.

Similarly, maintenance vehicle traffic to the site will be low, with an imperceptible impact. There will be a positive impact on air quality during operation, due to the displacement of fossil fuels.

9.8.7. Traffic movements associated with decommissioning will be less than construction phase, and no significant emissions to air are anticipated.

9.8.8. With regard to climate impacts, a positive impact is predicted in the operational phase, due to the displacement of fossil fuels. The EIAR calculates the carbon savings as a result of the proposed development by utilising the Scottish Windfarm Carbon Assessment Tool. I note that as well as assessing carbon savings from the renewable energy generated, the Tool also takes into account factors such as peat removal, drainage and forestry felling. The proposed development is estimated to displace 53,118 tonnes of CO_2 per annum, with a carbon payback time (i.e. for manufacturing, construction, decommissioning phases) of 0.4 years.

9.8.9. Cumulative Impacts

9.8.10. Potential cumulative impacts are considered in Section 6.4.5 of the EIAR, including the existing Greenoge Wind Farm, and a number of permitted battery energy storage facilities and solar PV developments. It is contended that there is no potential for significant cumulative impacts in terms of dust or air quality during construction. During operation, it is contended that the cumulative effect of the various renewable energy projects in the area will have a positive, long-term, significant, effect on air quality and a slight – moderate positive impact on climate.

9.8.11. Mitigation Measures

9.8.12. The EIAR and the accompanying Outline CEMP set out a series of mitigation measures for the construction phase, which generally comprise best practice construction methods. These include:

- Construction of internal access roads with graded aggregate finishes prior to commencement of other major construction activities;
- Use of a water bowser to spray work areas and haul roads in order to suppress dust migration;
- Covering of loads which could cause a dust nuisance;

- Use of gravel at the site exit point to remove any dirt from tyres and tracks before travelling along public roads;
- Wheel washing facilities at the entrance/exit point of the site;
- Re-vegetation of earthworks and exposed areas/soil stockpiles as soon as practicable;
- Control of access and egress of construction vehicles, with defined routes and onsite speed limits;
- Construction vehicles and machinery will be serviced and in good working order;
- Implementation of a dust control plan as part of the final CEMP.
- Cleaning of facades of dwellings should soiling take place;
- Ensuring all vehicles switch off engines when stationary;

9.8.13. No mitigation measures are proposed for the operational phase, given that a positive impact is predicted. Mitigation measures during the decommissioning phase will be similar to the construction phase.

9.8.14. Residual Impacts

9.8.15. No significant residual impacts are predicted in the construction phase. Once operational, the proposed wind farm will result in the avoidance of emissions from fossil fuel generators, with a residual positive impact on air quality. Similarly, there will be a residual positive effect on climate, again due to fossil fuel displacement, with the EIAR estimating displacement of c. 53,118 tonnes of CO_2 per annum.

9.8.16. Assessment

9.8.17. Air quality in the area is expected to be good and typical of a rural environment with a low level of pollutants. The main potential for significant effects will arise during the construction stage associated with the generation of dust and other fugitive emissions. The construction stage will also involve the operation of plant and machinery that will generate exhaust emissions. Subject to the mitigation measures proposed in the EIAR and the associated CEMP, which generally comprise good practice methods and measures for medium to large construction projects, I am satisfied that no significant adverse effects on air quality and climate are likely to

arise during the construction phase. During the operational phase there will be a positive residual impact on air quality and climate due to the displacing of fossil fuel energy generation and the associated displacement of CO_2 and other greenhouse gas emissions. I do not consider that this positive impact will be significant.

9.8.18. I accept the conclusions reached in the EIAR that the impacts on air quality and climate associated with the proposed development on its own, or in combination with other existing, permitted or proposed developments are not likely to be significant and will be mitigated by the measures outlined in the EIAR.

9.8.19. Conclusion

9.8.20. I have considered all of the written submissions made in relation to air and climate and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on air and climate can be avoided, managed and/or mitigated by measures that 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 impacts on air and climate.

9.9. Land, Soil, Water, Air and Climate – Noise and Vibration

9.9.1. Noise and Vibration are addressed in Chapter 7 of the EIAR. The introduction to the chapter states that potential construction and decommissioning noise and vibration impacts have been determined with reference to British Standard 5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1 Noise. Potential operational noise impacts are stated to have been determined with reference to the UK Institute of Acoustics', A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, 2013 (IoA GPG). The operational noise is compared with noise limits derived in accordance with the WEDG 2006. With regard to the Draft Revised WEDG 2019, it is stated that they have not yet been finalised and the noise limits from the WEDG 2006 are therefore used as they are current and are still accepted as appropriate within the expert community. It is also contended that the Draft WEDG 2019 have a number of technical errors, ambiguities and inconsistencies and requires further detailed review and amendment. It is stated that

if new Guidelines are adopted prior to a decision on the application, the applicant is happy to demonstrate compliance with same as appropriate.

9.9.2. Identified sources of construction phase noise include the construction of turbine foundations, erection of turbines, excavation of cable trenches, extraction from borrow pits, horizontal directional drilling, temporary bridge works, felling, construction of associated hardstandings and access tracks, and construction of the substations. The potential for noise from construction vehicles on local roads and access tracks is also identified. Sources of construction phase vibration include tracked excavators, disc cutters and pneumatic breakers used for cable trenching, rock breaking at borrow pits, excavation of turbine foundations, and HGV traffic.

9.9.3. Given the distance of the nearest noise sensitive locations form the site, the EIAR considers that vibration will not be perceivable by residents at their dwellings and will not result in building damage and that construction vibration will not be considered further.

9.9.4. Potential operational phase noise is primarily associated with the operation of the wind turbines. The EIAR notes that noise is only generated above the 'cut-in' wind speed (3 m/s) and below the 'cut-out' wind speed (25 m/s). The principal sources of noise are stated to be aerodynamic noise from the blades rotating and mechanical noise from the internal machinery (e.g. gearbox and generator). It is stated that noise may also be generated from ancillary equipment such as transformers, however these generally have low source noise levels compared to wind turbines and are stated to be unlikely to cause disturbance in the context of the other noise sources.

9.9.5. Section 7.2.3 of the EIAR describes the characteristics of wind turbine noise, with reference to blade swish (amplitude modulation, 'AM'), infrasound and low frequency noise, and tonal noise. With regard to AM, the EIAR outlines research in this area and concludes that, at present, there is no method for predicting Other AM (OAM) at any particular location before turbines begin operation. It is stated that in the unlikely event of OAM being present and following establishment of the likely cause, this can be addressed by turbine manufacturers and/or operator as and when it occurs. Similarly, with regard to tonal noise, it is stated that a correctly operating wind turbine is not considered to have tonal sound emissions, but that in the event of tonal noise

being present and following establishment of the likely cause, this can be addressed by turbine manufacturers and/or operator as and when it occurs.

9.9.6. With regard to low frequency noise and infrasound, the EIAR outlines research in this area and concludes that infrasound noise emissions from wind turbines are significantly below the recognised threshold of perception for acoustic energy within this frequency range and that infrasound is not a source which may be injurious to the health of a wind farm neighbour. It is also stated that wind turbines may produce low frequency noise at levels above the threshold of audibility, however there is no evidence of health effects arising from low frequency noise generated by wind turbines. An assessment of infrasound and low frequency noise from the wind farm has therefore been scoped out from the EIAR.

9.9.7. With regard to potential operational phase vibration impacts, it is stated that vibration from operational wind turbines is low and will not result in perceptible levels at nearby sensitive receptors nor will the levels of vibration result in any structural damage. Reference is made to UK and German research, including a study which found that, for a 2.4 MW wind turbine with a hub height of 140.6m, the vibration levels at less than 300m from the turbine had reduced such that they could no longer be differentiated from the background vibration levels. Since the nearest sensitive receptor is over 950m from the nearest proposed turbine, the EIAR states that the level of vibration is significantly below any thresholds of perceptibility and significantly below levels that would result in damage to the nearest buildings. On that basis, the EIAR scopes out operational vibration from further consideration.

9.9.8. The operational noise study area defined in the EIAR includes all residential dwellings with a predicted noise level greater than 35 dB L_{A90}, which is the lowest limit prescribed in the WEDG 2006. This is consistent with the IoA GPG on ETSU-R-97. Noting the presence of the existing Greenoge Wind Farm, it is stated that this has been considered in the cumulative assessment and that the operational study area of 35 dB L_{A90} includes the noise emissions from Greenoge Wind Farm. Figure 7.1 of the EAR indicates the locations of the 51 No. identified noise sensitive locations.

9.9.9. Section 7.3.3 of the EIAR addresses the appropriate noise limits for the various phases of the development. During the construction phase the EIAR refers to criteria

set out in British Standard 'BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise' which is stated to be consistent with the guidance contained in the Draft Revised WEDG 2019.

9.9.10. The operational phase noise criteria are stated to be based on the guidance in the WEDG 2006, guidance relating to ETSU-R-97 published by the UK Department of Trade & Industry and the Institute of Acoustics and the Carlow County Development Plan. The summarised WEDG 2006 noise limits, which are stated to be dB $L_{A90,10\ min}$ values, are as follows:

- 35-40 dB(A) for quiet daytime environments of less than 30 dB(A).
- 45 dB(A) or 5 dB(A) above background levels, whichever is greater, for daytime environments with background noise levels greater than 30 dB(A).
- A fixed limit of 43 dB(A) will protect sleep inside properties during the night.

9.9.11. In the absence of detailed guidance in the WEDG 2006 on what value within the range of 35-40 dB to use, the EIAR refers to ETSU-R-97 and the IoA GPG and proposes the following operational limits in DB $L_{A90,\ 10\ min}$:

- 37.5 dB where background levels are less than 30 dB and a fixed limit of 45dB or 5dB above background, whichever is the greater, where background levels are greater than 30 dB for daytime periods.
- A fixed limit of 43 dB L_{A90} for night-time periods.

9.9.12. As the WEDG 2006 does not define daytime and night-time hours, the definitions from ETSU-R-97 are used (07:00 to 23:00 hrs for daytime and 23:00 to 07:00 hrs for night-time).

9.9.13. Baseline noise monitoring was undertaken at 10 No. receptor locations surrounding the site. In order to remove the noise contribution from Greenoge Wind Farm, directional noise predictions were undertaken and measured noise levels were corrected to remove the influence of Greenoge Wind Farm (see Table 7.5 of EIAR).

9.9.14. Under the Do-Nothing scenario, the noise environment would remain largely unchanged.

9.9.15. Construction phase noise was modelled using guidance and plant noise data from BS 5228:2009+A1:2014 and the EIAR assesses various activities with the potential

to generate noise, including deliveries, removal of material to and from site, felling, preparation of access roads, excavation of material from a borrow pit, preparation of hardstands and drainage, excavation of foundations, pouring of foundations and installation of wind turbines. In all cases, the predicted noise is less than the daytime noise limit of 65 dB $L_{Aeq,1hr}$ resulting in a not significant to slight temporary impact. The associated grid connection works, which are not part of the proposed development before the Board, may be above the 65 dB $L_{Aeq,1hr}$ noise limit for short durations at a limited number of dwellings.

9.9.16. With regard to potential operational phase impacts, it is noted that the closest dwellings are at least 950m from the nearest turbine. An offset of 20m from buildings was utilised to account for their curtilage, and for the closest dwellings the actual curtilage boundary was used, where it was greater than 20m.

9.9.17. Since the final choice of turbine will be subject to tendering, and may include turbines not yet available, the sound power levels for the Siemens Gamesa SG 5.0-132 were used for the assessment as it is stated to be the worst performing turbine from a noise perspective of several turbines that meet the dimensional envelope of the proposed development. Noise predictions were performed for a range of standardised 10m height wind speeds from 3 m/s up to 9 m/s. It is stated that noise emissions from wind turbines plateau at wind speeds above 9 m/s up to the cut-out speed.

9.9.18. Table 7.20 of the EIAR sets out the predicted noise levels adjacent to the 10 noise monitoring locations, the derived daytime and night-time noise limits at each location and the excess noise level, where relevant. It is stated that the locations presented represent the dwellings with the highest noise levels for each of the 10 monitoring locations, while the predicted noise levels for each of the noise sensitive receptor locations are set out in Appendix 7.6 of the EIAR[11].

9.9.19. The predicted noise levels are stated to be for a worst-case scenario with noise sensitive receptors downwind of the proposed wind farm, whereas in practice receptor locations will not be downwind of all noise sources and the actual noise levels will be lower than those presented in the EIAR.

[11] I note that receptor ID changes varies between ‘H1’, ‘H2’ etc. and ‘R1’, ‘R2’ etc. It appears that this is a typographical error.

9.9.20. The EIAR concludes that the predicted noise levels from the proposed development are below the daytime and night-time noise levels. However, it goes on to state that at some receptor locations a new source of noise will be introduced into the soundscape and it is expected that there will be a long-term moderate significance of impact on the closest dwellings to the proposed wind farm.

9.9.21. With regard to the decommissioning phase, noise impacts will be less than the construction phase, since many elements such as turbine bases and cabling will be left in place. It is proposed to undertake decommissioning during daytime hours in accordance with a decommissioning plan to be agreed with Carlow County Council.

9.9.22. Cumulative Impacts

9.9.23. In terms of cumulative impacts during the construction phase, it is not expected that there will be cumulative impacts with other large or small scale developments in the vicinity, however, the potential for cumulative impacts with commercial forestry harvesting is identified. Any such cumulative impacts are anticipated to be short term and not significant.

9.9.24. In terms of operational phase cumulative impacts, the EIAR notes that there are several wind farms within 20 km of the site including Ballaman, Ballindaggin, Ballon, Ballycadden, Ballynancoran, Carranroe, Castledockrell, Cronelea, Gibbet Hill, Greenoge, Knockalour, Monaughrim, Shillelagh and Tullow Mushroom Growers. Of these, it is noted that Greenoge Wind Farm is located directly east of the proposed wind farm site and the EIAR, with reference to guidance contained in the IoA GPG, considers that to be the only wind farm with the potential to result in a cumulative impact.

9.9.25. Table 7.23 of the EIAR sets out the predicted cumulative noise levels adjacent to the 10 noise monitoring locations in the same format as Table 7.20, with the predicted cumulative noise levels at all receptor locations set out in Appendix 7.7. It is stated that the cumulative predicted noise levels comply with the daytime and night-time limits at the majority of noise sensitive locations with the only exceedance during night-time periods at location H39 at standardised 10m height wind speeds of 11 and 12 m/s. It is stated that the dominant noise at this receptor is from Greenoge Wind Farm and that the noise from Greenoge Wind Farm is 42.1 and 43.4 dB at standardised 10 m height wind speeds of 11 and 12 m/s, respectively.

9.9.26. In addition to potential cumulative noise with Greenoge Wind Farm, the EIAR notes the potential for commercial forestry harvesting to occur during the operational phase of the wind farm. It is stated that the noise emissions from the harvesting and the operational wind farm are very different and there is no one single standard on which both activities can be assessed. Noise impacts associated with the harvesting will be short-term in duration and variable at any given noise sensitive location depending on the distance from the machinery.

9.9.27. Mitigation Measures

9.9.28. With regard to mitigation measures during construction phase, while the predicted noise levels are below the noise limits in BS 5228-1:2009+A1:2014, a number of mitigation measures are proposed. These include: restricting movements along access routes to the standard working hours, unless specifically agreed otherwise such as during turbine deliveries; consultation with the local community and local authority regarding construction activities; undertaking of construction works in accordance with BS 5228:2009+A1:2014 and the noise control measures set out in the CEMP; maintenance of plant to minimise noise; fitting of exhaust silencers to all vehicles and mechanical plant; shutting down or throttling back of machinery when not in use; use of noise barriers/screens and limiting the number of plant items operating simultaneously, where practicable.

9.9.29. The proposed hours of construction activity are between 07:00 - 19:00 Monday to Friday and 07:00 - 13:00 on Saturdays, with occasional works outside these hours when agreed in advance with the planning authority.

9.9.30. With regard to the requirement for operational phase mitigation, as noted above the predicted cumulative noise from the proposed project and the existing Greenoge Wind Farm is above the night-time noise limit at receptor H39 at wind speeds of 11 and 12 m/s. However, at 12 m/s the predicted noise level from Greenoge Wind Farm only is above the noise limit and therefore, the EIAR contends that it is not possible to demonstrate compliance at this wind speed. Instead, the EIAR proposes to maintain noise emissions from the proposed wind farm at 10 dB below the predicted operational noise from Greenoge, on the basis that will result in a negligible increase in cumulative noise at this location.

9.9.31. In order to achieve this, it is proposed that some of the turbines may need to be operated in noise reduced modes of operation. It is stated that this can be achieved using various configuration or curtailment strategies and that an appropriate mitigation strategy may be specified for the procured turbine model prior to construction of the wind farm. Regardless of the strategy utilised, it is stated that the operational noise resulting from the proposed development will meet the noise limits set out in Section 7.4.2 of the EIAR or be at least 10 dB below the noise level from Greenoge Wind Farm.

9.9.32. The EIAR notes that the operational noise predictions have been carried out for the Siemens Gamesa SG5.0 132 which is stated to be the worst performing turbine from a noise perspective of turbines that meet the dimensional envelope of the proposed project. Consequently, it may be the case that mitigation will not be required for the turbine that is ultimately selected for the site.

9.9.33. The EIAR concludes with regard to operational phase mitigation that, regardless of the make or model of the turbine eventually selected, the noise will be of no greater significance than that used for the purposes of the EIAR assessment and that the finalised mitigation measures to be implemented at the site will be chosen to ensure that the noise limits are met.

9.9.34. If permission is granted, the EIAR commits to undertaking an operational noise survey to ensure the project complies with the noise limits. If an exceedance in the noise limit occurs, it is stated that mitigation measures will be refined to ensure compliance with the noise limits is achieved at all noise sensitive locations.

9.9.35. Mitigation measures during the decommissioning phase include restricting movements along access routes to the standard working hours.

9.9.36. Residual Impacts

9.9.37. No significant residual noise impacts are predicted in the wind farm construction and decommissioning stage, as activities will be below the construction noise limit of 65 $dBL_{Aeq,1hr}$ at residential dwellings. For the grid connection works, which do not form part of the proposed development, the identified temporary significant impact is mitigated to a moderate short-term residual impact with the use of temporary noise barriers/screens.

9.9.38. In the operational phase, it is stated that wind farm noise levels meet the daytime noise limit derived using the WEDG 2006 and that, with the identified mitigation measures, the night-time noise limit derived using the WEDG 2006 will also be met. However, as a new source of noise will be introduced into the soundscape for some receptors, it is expected that there will be a slight to moderate significance of impact, with dwellings closest to the project experiencing a long-term moderate significance of impact.

9.9.39. **Assessment**

9.9.40. Further Information

9.9.41. In response to the Board's request for clarity on proposed turbine dimensions, the applicant submitted an updated noise assessment. While the noise assessment contained in the EIAR was based on a hub height of 112m (i.e. the highest in the turbine range), the additional information submitted by the applicant assesses a hub height of 102.5m (i.e. the lowest in the turbine range).

9.9.42. The additional information indicates marginally higher noise levels at the nearest residential receptors with the lowest hub height. However, under both scenarios the wind farm meets the daytime and night-time criteria in accordance with the WEDG 2006.

9.9.43. For the cumulative noise assessment, the results remain the same, with the only exceedance at location H39 during night-time at wind speeds of 11 m/s and 12 m/s. (I note that there is an error in Table 3-9 of the applicant's further information response, with the exceedances of noise limits at H39 incorrectly recorded as 'daytime excess' rather than 'night-time excess'). This suggests that regardless of the turbine chosen within the specified range, the predicted cumulative impact remains the same.

9.9.44. Appropriate Noise Guidance

9.9.45. The Save Mount Leinster appeal makes a number of references to the Supreme Court judgment in the case of Balz and Heubach v An Bord Pleanála [2019] IESC 90 and the need to avoid blind reliance on outdated guidance or to listen to one side only. It is contended that the WEDG 2006 and ETSU-R-97 are outdated with regard to the scale of turbines proposed and more recent scientific studies.

9.9.46. Save Mount Leinster submitted a copy of a document, dated July 2005, which is entitled 'ETSU-R-97: Why it is wrong', prepared by Dick Bowdler, a UK-based noise consultant. The source and purpose of this document is unclear (i.e. it is not clear whether it is from a peer-reviewed scientific journal or if it is an individual opinion piece). Noting that the WEDG 2006 and the 2013 Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97, which underpin the applicant's noise assessment, post-date Mr Bowdler's document, it is reasonable to conclude that Mr Bowdler's paper represents an individual opinion rather than an emerging scientific consensus among noise specialists. Furthermore, it is of note that the Draft WEDG 2019, while not yet finalised, state that "these Guidelines adapt the 2013 approach to the IoA application of ETSU-R-97". Therefore, while ETSU-R-97 is obviously of considerable vintage, it is used in the formulation of various guidelines, and there is no clear evidence of scientific consensus that this document or guidelines which reference it are no longer adequate. I note in this regard that the EIAR assessment made use of the Institute of Acoustics' Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, which, as noted above, was published in 2013.

9.9.47. Noting the delays in finalising the Draft WEDG 2019 and the conditionalities and caveats contained in the WHO Guidelines (see below) it seems that the issue of wind turbine noise is in a state of flux. Both the applicant and Save Mount Leinster contend that the Draft WEDG 2019 contain various errors and inconsistencies that need to be resolved prior to finalisation of the guidelines. However, it is not a matter for the Board to determine what should be contained in the final replacement WEDG.

9.9.48. In the interim, I would be hesitant to depart from the current WEDG 2006 with regard to noise limits and consider it reasonable to apply considerable weight to these adopted guidelines which have not been withdrawn by the Minister and which are therefore still the relevant section 28 guidelines that the Board must have regard to.

9.9.49. In the absence of convincing evidence or scientific consensus that the WEDG 2006 are not adequate or fit for purpose, and noting that the noise assessment has been undertaken in accordance with the more recent IoA GPG, I consider the application of the WEDG 2006 noise limits to be appropriate.

9.9.50. World Health Organisation's Environmental Noise Guidelines for the European Region, 2018

9.9.51. A number of parties make reference to the WHO Environmental Noise Guidelines for the European Region, published in 2018 and contend that they should be utilised in assessing the proposed development. Given that the current section 28 Ministerial Guidelines (i.e. WEDG) date from 2006, I consider it important to consider the 2018 WHO Guidelines in the context of considering developments in scientific knowledge and understanding.

9.9.52. The main purpose of the WHO Guidelines is stated to be the provision of recommendations for protecting human health from exposure to environmental noise originating from various sources. The Guidelines are stated to provide robust public health advice underpinned by evidence, which is essential to drive policy action that will protect communities from the adverse effects of noise. They set out a series of specific recommendations for various noise sources and each recommendation is rated as either 'strong' or 'conditional'.

9.9.53. In relation to wind turbine noise, the following recommendations and strength ratings are set out in the Guidelines:

Recommendation	**Strength**
For average noise exposure, the GDG conditionally recommends reducing noise levels produced by wind turbines below **45 dBL_{den}**, as wind turbine noise above this level is associated with adverse health effects.	Conditional
No recommendation is made for average night noise exposure L_{night} of wind turbines. The quality of evidence of night-time exposure to wind turbine noise is too low to allow a recommendation.	Conditional
To reduce health effects, the GDG conditionally recommends that policymakers implement suitable measures to reduce noise exposure from wind turbines in the population exposed to levels above the guideline values for average noise exposure. No evidence is available, however, to facilitate the recommendation of one particular type of intervention over another.	Conditional

9.9.60. In relation to 'conditional' recommendations, the Guidelines state that these require "a policy-making process with substantial debate and involvement of various stakeholders. There is less certainty of its efficacy owing to lower quality of evidence of a net benefit, opposing values and preferences of individuals and populations affected or the high resource implications of the recommendation, meaning there may be circumstances or settings in which it will not apply". Conversely, with regard to 'strong' recommendations, which have not been utilised with regard to wind turbine noise, the Guidelines state that these "can be adopted as policy in most situations".

9.9.61. I note that the evidence for health outcomes associated with wind turbine noise, as summarised in Table 36 of the Guidelines, is either stated to be low quality or that no studies were available. The applicant, in responding to the third party appeals, notes that the recommendation of 45 dBL_{den} is based on four studies which showed that 10% of the population were 'highly annoyed' with wind turbines at this noise level. As per Table 42 of the Guidelines, this evidence is considered by WHO to be of low quality. Furthermore, as noted by the applicant, the Guidelines state that the acoustical description of wind turbine noise by means of L_{den} or L_{night} may be a poor characterisation of wind turbine noise and may limit the ability to observe associations between wind turbine noise and health outcomes.

9.9.62. The Guidelines also state that "further work is required to assess fully the benefits and harms of exposure to environmental noise from wind turbines and to clarify whether the potential benefits associated with reducing exposure to environmental noise for individuals living in the vicinity of wind turbines outweigh the impact on the development of renewable energy policies in the WHO European Region".

9.9.63. I also note that the Guidelines state, with regard to their implementation, that:

> "The WHO guideline values are evidence-based public health-oriented recommendations. As such, <u>they are recommended to serve as the basis for a policy-making process in which policy options are considered. In the policy decisions on reference values, such as noise limits for a possible standard or legislation, additional considerations – such as feasibility, costs, preferences and so on – feature in and can influence the ultimate value chosen as a noise limit.</u> WHO acknowledges that implementing the guideline recommendations

will require coordinated effort from ministries, public and private sectors and nongovernmental organizations, as well as possible input from international development and finance organizations." [emphasis added.]

9.9.64. Having regard to the foregoing, I conclude that the WHO Guidelines, while useful in understanding the possible relationship between noise and health issues, are primarily of benefit at population scale, i.e. in terms of informing a policy-making process at a strategic and land use planning policy level, rather than in the case of specific wind energy projects. I note, in this regard, the reported low quality of evidence, the 'conditional' nature of the recommendations and the stated uncertainty with regard to the appropriate noise measurement parameters.

9.9.65. Environmental Noise Directive (2002/49/EC)

9.9.66. It has also been contended that the proposed development is in breach of the Environmental Noise Directive (END). I note that the END does not set noise limit values or target values and I consider that the proposed development is not contrary to the Directive as it currently stands.

9.9.67. Construction/Decommissioning Phase Noise Impacts

9.9.68. I note the range of activities associated with the construction phase, including felling, excavations, development of a borrow pit, civil works, foundation construction etc. as well as the short-term nature of the construction period for the proposed development. While no national limits are set for construction noise, I consider that the nature and extent of the works associated with the proposed development would not be untypical of similar infrastructure projects and that the noise nuisance caused by construction activities would be short-term. The applicant has set out appropriate site management measures and protocols in the EIAR and associated CEMP which generally comprise good practice construction methods. I am satisfied that the implementation of these measures would be sufficient to reduce noise nuisance and disturbance during the construction phase to an acceptable level, noting the significant separation distances to the nearest residential receptors. Should the Board be minded to grant permission, I recommend that suitable conditions be attached regarding the CEMP and limits on the days and times when construction can be undertaken, thus reducing potential adverse impact to residents nearby. In

conclusion, I do not consider that construction phase noise impacts would be significant.

9.9.69. The decommissioning phase works will be similar to the construction phase, but of less magnitude given that various elements will be left in situ. I therefore consider it reasonable to draw similar conclusions for the decommissioning phase as those drawn for the construction phase, i.e. that the impacts would be short-term and would not be significant.

9.9.70. Operational Phase Noise Impacts

9.9.71. Having reviewed the information submitted by the applicant in the EIAR, associated appendices and the further information response, I consider that a robust noise assessment, informed by adequate background noise monitoring, was undertaken. I note in this regard that the noise modelling utilised a number of conservative or worst-case assumptions, including that all noise sensitive locations are downwind of all wind turbines and the use of the worst performing turbine from a noise perspective. As a result, the EIAR contends that the actual noise levels from the proposed development will be less than those predicted and the extent of required mitigation may also be reduced.

9.9.72. The assessment demonstrates that the proposed development, regardless of hub height within the specified range, complies with the daytime and night time noise limit criteria at noise sensitive receptors as per the WEDG 2006. In the cumulative impact scenario, there is compliance with daytime noise limits at all locations, however there is night-time exceedance at one location (H39) at higher wind speeds of 11 m/s and 12 m/s. The dominant noise at that receptor is from the existing Greenoge Wind Farm and it is proposed to curtail turbine operation at these higher wind speeds to maintain the proposed wind farm at 10dB below the predicted operational noise from Greenoge, resulting in a negligible increase in cumulative noise.

9.9.73. As noted above, the EIAR assessment includes conservative assumptions, and depending on the final choice of turbine, the actual noise is likely to be less, resulting in less need for turbine curtailment. Ultimately, the derived noise limits set out in the EIAR will guide the turbine specification and mode of operation. Should the Board be minded to grant permission, I recommend that a suitable condition be included to limit daytime and night-time noise at noise sensitive receptors in line with the WEDG

2006 and that the applicant be required to submit and agree a noise compliance monitoring programme for the proposed development with the planning authority, to include the mitigation measures required to achieve compliance with the noise limits, such as the curtailing of particular turbines. The condition should also require that the results of the initial noise compliance monitoring be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm.

9.9.74. Subject to compliance with the identified mitigation measures and noise limits and noting the significant separation distances between the proposed turbines and the nearest residential receptors, I do not consider that the proposed development would be likely to have a significant impact on sensitive receptors by way of noise disturbance.

9.9.75. Particular Characteristics of Wind Turbine Noise

9.9.76. In addition to 'normal' operational noise impacts, a number of parties also contend that the proposed development will result in noise impacts as a result of particular characteristics of wind turbine noise, such as amplitude modulation and/or infrasound and low frequency noise.

9.9.77. The Save Mount Leinster appeal contends that the EIAR fails to adequately address the issue of amplitude modulation (AM), in support of which they have submitted a number of scientific journal articles and other documents.

9.9.78. Amplitude modulation is addressed in Section 7.2.3.1 of the EIAR with reference to various international studies. Save Mount Leinster contends that the referenced research is outdated and is contradicted by more recent research identifying the extent of AM issues at wind farms.

9.9.79. Having reviewed the supporting documents submitted by Save Mount Leinster, they essentially demonstrate that AM may occur at wind farms and that it can be measured in the field. This general position is not disputed by the applicant in their submitted documentation and as noted above they have addressed AM in the EIAR.

9.9.80. Having reviewed the information submitted by the applicant and the appellant it appears to me that the issue of amplitude modulation is a particularly complex matter which is the subject of ongoing international research and debate with regard to the frequency of occurrence at wind farms and the potential impacts associated with it.

Due to the complex mechanisms that appear to cause the phenomenon it appears that there is currently no reliable way of predicting it in advance of wind farm construction.

9.9.81. Noting that the wind turbines will be separated from noise sensitive residential receptors by distances in excess of 950m, the appellants have not provided any compelling evidence to suggest that amplitude modulation will result in significant noise or associated health or residential amenity impacts as a result of the proposed development.

9.9.82. I note the applicant's statement in the EIAR that in the event of OAM being present and following establishment of the likely cause, this can be addressed by turbine manufacturers and/or operator as and when it occurs.

9.9.83. Given that there is no evidence that amplitude modulation will arise in this instance or that, should it arise, that it would be of a level to impact on local residents or the environment, I do not consider that this issue would constitute a reasonable ground for refusal of planning permission or for AM-related planning conditions.

9.9.84. Should the Board be minded to grant permission, I instead consider that the use of a 'standard' wind turbine noise condition with noise monitoring would be appropriate, given the evolving nature of research on the issue of AM.

9.9.85. The issues of infrasound and low frequency noise were also raised by a number of third parties. This issue was addressed in Section 7.2.3.2 of the EIAR with reference to numerous international studies.

9.9.86. While the Draft WEDG 2019 have not been adopted, they do include a relatively up-to-date analysis of various environmental matters relating to wind farms. In relation to infrasound, they state that "there is no evidence that wind turbines generate perceptible infrasound". This is stated to be due to developments in wind turbine design which has "effectively eliminated continuous infrasound elements from wind turbine noise".

9.9.87. Having regard to the information submitted by the applicant, including international research, and noting the nature of the proposed development and the substantial separation distances to the nearest residential receptors (in excess of 950m), there is no evidence before the Board to indicate that the proposed development would

result in infrasound, low frequency noise or vibration of a type or magnitude that would impact on the environment or people in the vicinity.

9.9.88. Turbine Type and Noise

9.9.89. As the final choice of turbine has not been made at application state, the noise assessment undertaken in the EIAR utilised sound power levels for the Siemens Gamesa SG 5.0-132 turbine. Save Mount Leinster query this approach and state that they do not see how the applicant's claim to have assessed a 'worst case scenario' can be true.

9.9.90. The applicant, in their response to the request for further information, has identified a narrow range for hub height, tip height and rotor diameter within which the final turbine would fit. With particular regard to the issue of noise, what is relevant is the noise limit that will be applied to the proposed wind turbines, and by which the applicant would be constrained when specifying and choosing the final turbine type. I am satisfied that the applicant has adopted a conservative approach by assessing the impacts of the proposed development based on the sound power levels associated with the worst performing turbine model and subject to appropriate noise limit conditions and monitoring, I concur with their statement that "regardless of the make or model of the turbine eventually selected for installation on site, the noise it will give rise to will be of no greater significance than that used for the purposes of this assessment".

9.9.91. Conclusion

9.9.92. I have considered all of the written submissions made in relation to noise and vibration and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse noise and vibration impacts can be avoided, managed and/or mitigated by measures that 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 noise and vibration impacts.

9.10. Material Assets, Cultural Heritage and the Landscape – Material Assets

9.10.1. Material Assets is addressed in Chapter 11[12] of the EIAR while telecommunications and aviation are considered in Chapter 16.

9.10.2. The main material assets identified in the EIAR as being subject to potential environmental impacts are: land use; recreation, amenity and tourism; and renewable, non-renewable resources and utility infrastructure.

9.10.3. With regard to land use, the site is currently primarily in commercial forestry use and is planted with coniferous forestry, managed by Coillte. The site also includes a number of recreational walking trails, an area of agricultural lands and areas of heath. The wider area is primarily in agricultural use, with further areas of commercial forestry and linear residential settlement along the local road network.

9.10.4. During the construction phase there will be some disruption of land use, primarily on the forestry lands where the majority of the construction work will take place and to a smaller extent on agricultural lands where turbine T3 is proposed and a section of heath and scrubland where turbine T6 is proposed. It is proposed to fell c. 24.4 ha of coniferous forestry to accommodate the construction of the development which is stated to be a moderate, permanent impact to forestry in the area. Forestry replant lands have been identified in Counties Sligo and Limerick, which will be a requirement of the felling licence.

9.10.5. The closure of the Kilbrannish Wood recreation trail during the construction phase is stated to have a short-term significant negative impact on recreational land use at the site for the duration of the construction phase.

9.10.6. The EIAR also assesses potential land use impacts associated with the grid connection and turbine delivery route works, which do not form part of the proposed development before the Board. No significant impacts are anticipated.

9.10.7. In the operational phase it is anticipated that there will be no significant impact on existing land uses, or agricultural activities, given that the footprint of the proposed development will occupy a small proportion of the development site area. The

[12] Chapter 11 also addresses Population and Human Health, which I have addressed separately at Section 9.4.

proposed additional walking trail at the wind farm site is stated to have a long-term significant positive impact on recreation land use at the site.

9.10.8. No activity is expected at the associated grid connection and turbine delivery route during the operational phase, except where repair works may be required. No significant impact on land use is expected in this scenario.

9.10.9. Mitigation measures for land use are primarily related to preliminary design stage and the re-use of existing forestry tracks in order to minimise the construction of new tracks and roads and minimise the removal of forested areas. Construction will also be undertaken in accordance with the CEMP to avoid undue impact to adjacent land uses.

9.10.10. No significant adverse negative residual effects arising from the project on land use are anticipated during construction, operation or decommissioning. As noted above, the provision of new and upgraded recreation walking trails is stated to have a long-term significant positive impact on recreation land use at the site.

9.10.11. With regard to recreation, amenity and tourism, the EIAR sets out the amenities in the area, such as the Mount Leinster Heritage Drive, Columban Way, forest recreation and hang gliding/paragliding. While a potential slight, temporary impact to recreation, amenity and tourism due to the closure of existing forestry tracks during the construction and decommissioning phases of the proposed development is anticipated, there are no expected significant, adverse impacts to recreation, amenity and tourism in the surrounding area. Under the worst case scenario, it is stated that a moderate negative impact to hang-gliding and paragliding activity will occur in close proximity to the site during the operational phase, due to the presence of the proposed wind turbines. It is stated that much of this activity is concentrated to the south of the site around Mount Leinster and can continue during the operational phase.

9.10.12. As noted above, a residual long-term significant positive impact on recreation, amenity and tourism is anticipated as a result of the provision of new and improved recreation walking trails at the site which will remain after decommissioning of the wind farm development.

9.10.13. With regard to renewable, non-renewable resources and utility infrastructure, it is stated that the use of non-renewable resources such as aggregates and cement

during construction will be an imperceptible impact, with use of site-won aggregates from the proposed borrow pit and re-use of existing forestry tracks. It is stated that the proposed development will result in a positive residual impact on non-renewable resources by offsetting the use of fossil fuels in electricity generation over the lifetime of the project. The taking-in-charge of the on-site substation and associated off-site substation and grid connection by EirGrid will result in a slight positive residual impact on electricity infrastructure in the area. Residual waste from the construction and decommissioning phases will be disposed of in a licenced waste facility with a slight impact on the capacity of licenced waste facilities in the area. In the operational phase, no waste will be produced.

9.10.14. The issues of telecommunications and aviation are considered in Chapter 16 of the EIAR. During the construction phase, the EIAR identifies potential requirements for localised services interruptions during the turbine delivery stage, due to the need to disconnect or relocate overhead cables to accommodate the oversize loads. Any such impacts will be short-term, temporary and not significant. In the operational phase, having engaged in consultation with service providers, the EIAR states that no significant impacts on telecommunications and broadcasting are anticipated.

9.10.15. With regard to aviation, the closest airport is Kilkenny Airport, a private licenced facility 33.6km west of the wind farm. The EIAR notes this separation distance and the presence of existing wind turbines in the area and considers that no significant impacts are likely to arise during construction, operation or decommissioning phases.

9.10.16. No significant cumulative impacts with other existing or proposed projects on material assets are anticipated.

9.10.17. **Assessment**

9.10.18. Hang Gliding/Paragliding

9.10.19. The potential impact of the proposed development on hang gliding and paragliding activities were raised by a number of parties and formed the basis of the Irish Hang Gliding and Paragliding Association appeal. I have addressed the potential impact of the proposed development on these activities separately in Section 8.8 above where I concluded that the potential impact on paragliding and

hang-gliding activities would not be so significant as to warrant refusal of planning on this basis. Should the Board be minded to grant permission, I do not consider that the imposition of conditions, as suggested by IHPA, which restrict the operation of wind turbines in circumstances where third parties wish to engage in hang-gliding/paragliding in the vicinity of the proposed wind farm would be reasonable or appropriate.

9.10.20. Recreation, Amenity and Tourism

9.10.21. The potential impact of construction traffic on tourism traffic and on the tourism assets of the area were raised by a number of parties, as was the operational phase impact on tourism and the associated rural economy. I have addressed the potential impacts on traffic and transportation separately in Section 9.11 below.

9.10.22. Save Mount Leinster contend that the proposed development would be contrary to tourism-related policies and they note the findings of Failte Ireland research, which found that 91% of overseas holidaymakers rated scenery as an important part of a destination with natural/unspoilt environment also rated at 91%. They also note an Irish Tourism Industry Confederation report from 2014 which references Scottish research which found that the presence of wind farms makes certain places less appealing for walking and climbing. They note the proximity of the proposed development to various walking, cycling and driving routes used by tourists and contend that the appeal of these will be reduced by the proposed development and that eco-tourism businesses will be negatively affected as a result.

9.10.23. The EIAR notes that both the WEDG 2006 and the Draft WEDG 2019 state that tourism and wind energy can co-exist happily, with reference to SEAI research that found a positive disposition towards wind farms. Failte Ireland research is also referenced, which found that 71% of respondents claimed that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a positive impact on future visits to the island of Ireland. Similar survey results from Scotland are also provided in the EIAR.

9.10.24. I note the presence of the existing Greenoge Wind Farm beside the site and the presence of a considerable number of other wind farms within a 20km radius. There is no evidence before the Board that the operational Greenoge Wind Farm,

notwithstanding the substantially lower turbine height than proposed in this instance, has had a significant adverse impact on tourism or the agri-tourism economy in the area.

9.10.25. The proposed development includes improvements to recreational walking trails within the site and would also facilitate the development of the Columban Way walking route through the site. I have addressed the potential landscape and visual impacts of the proposed development elsewhere, but with specific regard to tourism and recreation, I consider that the proposed development would generally enhance the tourism and recreational amenities of the area, other than the impact on hang gliding and paragliding, as noted above.

9.10.26. Telecommunications and Aviation

9.10.27. With regard to telecommunications and aviation, it is clear that the applicant has attempted to engage in consultation with the various telecommunications service operators, and I note that no observations were received from any of these operators. None of the consultation responses received from the Broadcasting Authority of Ireland, ESB Telecoms, Eir Mobile and Three Ireland identified any likely impacts arising from the proposed development, and I consider it unlikely that the proposed development would result in any significant electromagnetic or other interference with telecommunications infrastructure and services.

9.10.28. With regard to aviation, I note that the IAA's submission states that their Air Navigation Services Division should be notified in advance of the erection of any manmade objects. The applicant has also undertaken to erect aviation lighting to the turbines, if required by IAA or DAA, and I consider this to be appropriate. If the Board is minded to grant permission, I recommend a suitable condition in this regard.

9.10.29. Other Material Assets

9.10.30. I concur with the applicant's conclusion that no significant adverse impacts on material assets are likely, although there will be a positive residual impact on electricity supply as a result of the operation of the proposed development. Given the scale and nature of the proposed development, no significant cumulative impacts on material assets are likely to occur.

9.10.31. Conclusion

9.10.32. I have considered all of the written submissions made in relation to material assets and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on material assets can be avoided, managed and/or mitigated by measures that 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 impacts on material assets.

9.11. Material Assets, Cultural Heritage and the Landscape – Traffic and Transportation

9.11.1. Traffic and Transportation are addressed in Chapter 13 of the EIAR.

9.11.2. The EIAR assessment makes use of field surveys, data counters, desktop studies, consultation (TII and Carlow County Council Roads Authority) and utilises guidance published by TII and the EPA. While a 12 - 18 month construction programme is envisaged, the EIAR assumes a compressed 12 month construction programme for the purposes of construction traffic generation calculations and a 'worst case' assessment.

9.11.3. The proposed access to the site is via an existing Coillte forestry entrance on the L2026. This entrance will be used for both construction and operation, and it is proposed to upgrade it in accordance with TII technical guidance in order to achieve sightlines of 160m in both directions at a setback distance of 3m.

9.11.4. With regard to potential impacts, in the 'do-nothing' scenario, there will be no change to the current road network and existing traffic patterns in the area.

9.11.5. In the construction phase, there will be additional construction related traffic on the existing public road network over the duration of the construction works, including: HGVs transporting construction material, excavated material and electrical components and earthworks machinery; fuel trucks; Light Goods Vehicles; and oversized loads, including turbine components.

9.11.6. Potential negative impacts on the existing road network resulting from construction traffic include: delay/ disruption to road users; road safety issues; inappropriate parking of construction related vehicles; soiling of public roads; damage to existing road surfaces.

9.11.7. Felling of coniferous forestry will be required and it is stated that significant areas will be felled in advance of the commencement of the wind farm construction. A number of sawmills in the surrounding counties are identified, which are stated to be easily accessible.

9.11.8. Similar potential impacts arise in respect of the cable route, offsite substation and turbine delivery route works, which do not form part of the proposed development before the Board. Additional potential impacts are identified in respect of temporary road closures and diversions during cabling works.

9.11.9. The construction phase for the entire project (i.e. wind farm + cable route works + offsite substation + turbine delivery route works) will lead to 13,046 additional HGV trips (two-way) over the duration of the construction works, with an average daily increase of 42 HGV trips per day over the 12-month construction period. This increases to an average of 57 HGV trips per day during the peak month which occurs in month 6 of the programme for HGV traffic. The average workforce of 30-40 persons is estimated to give rise to an increase of LGV traffic of 40 trips per day on average, rising to 50 trips during peak periods for LGV traffic during months 7, 8 and 9.

9.11.10. The combined HGV and LGV average daily increase is 82 trips per day throughout the construction programme. Table 13-5 of the EIAR sets out the predicted AADT during the construction phase with this average daily traffic and the impact on the surrounding road network. The busiest period during the construction programme is expected to occur in month 7 when combined HGV and LGV traffic increases to 105 average daily trips. Table 13-6 of the EIAR sets out the predicted AADT during this peak month and the impact on the road network.

9.11.11. Considering the wind farm and offsite substation separately from the grid connection works (which will be isolated from the wind farm site and largely independent) a total of 6,600 additional HGV trips (two-way) over the duration of the construction works are anticipated, with an average daily increase of 21 HGV trips per day rising to a peak in month 6, where average daily HGV trips rises to 32. The average workforce of 25 persons, increasing to 30 persons during peak periods is calculated to give rise to an average daily increase of 34 LGV trips per day, increasing to 44 LGV trips per day in the peak periods. Table 13-8 of the EIAR sets

out the predicted AADT during the construction period and the impact on the road network. I note that existing traffic count was not available for the L2026 and a low traffic volume of 500 AADT was assumed with a HGV/LGV split in line with nearby local roads.

9.11.12. The windfarm construction works will result in <1% temporary increase in traffic volumes on the M11, N80 and R724 and a c. 1% increase on the N30. The affected local roads such as the L3046, L7111 and L2026 will see a more significant temporary increase in traffic volumes over the course of the construction phase of c. 5%, 19% and 11% respectively. However, the L3046 and L7111 do not form part of the TDR or haul routes and were chosen as being representative of the local road network along which the grid connection cable route passes. They will therefore not experience the level of construction traffic identified in Table 13-8.

9.11.13. The EIAR considers the adverse effects on the receiving environment associated with the construction works at the main wind farm site to be short-term in duration and slight to moderate in significance without appropriate mitigation.

9.11.14. In the operational phase, trip generation is anticipated to be minimal as the wind farm will be operated remotely, with traffic primarily associated with maintenance staff and environmental monitoring/compliance staff. Additional operational phase traffic may arise in the case of unforeseen or unplanned events such as emergency turbine repair works. The proposed recreational amenity trail will also attract small numbers of visitors to the site throughout the operational phase of the project. These visitors will use the existing public car park which is directly accessible from the public road. I note a discrepancy in Section 13.5.3 of the EIAR, where it is stated that a small number of full-time wind farm personnel are expected to be present during the operational phase of the project. This contradicts the statement that the wind farm will be operated remotely, however no material level of operational traffic is likely.

9.11.15. In the decommissioning phase, traffic will be associated primarily with the removal of aboveground turbine components. It is proposed to leave other elements such as foundations and access tracks in place and the traffic impact associated with the decommissioning phase is stated to be temporary in duration and slight in significance without mitigation.

9.11.16. Cumulative Impacts

9.11.17. The potential for cumulative impacts is considered with respect to the grid connection and turbine delivery works, as outlined above, together with the replant lands in Counties Sligo and Limerick, the existing Greenoge wind farm, a permitted battery energy storage in Kellistown East, Co. Carlow and a solar PV development at Garreenleen, Bendinstown, Tinnaclash and Ardbeam, Co. Carlow.

9.11.18. No significant cumulative impacts are identified as a result of these other existing or proposed projects.

9.11.19. Mitigation Measures

9.11.20. The principal mitigation measure proposed is compliance with a Traffic Management Plan (TMP). A TMP was included as part of the CEMP in Appendix 3.1 of the EIAR, and it is proposed that this will be developed further prior to commencement by the main contractor in consultation with the roads authority.

9.11.21. The traffic management measures to be implemented include:

- Appointment of a Traffic Management Co-Ordinator.
- Identification of roads that will be used to access the project site and roads that are not to be used.
- Use of one-way construction traffic movement systems if desired by the roads authority.
- Pre-construction and post-construction condition surveys on all public roads that will be used in connection with the development, with the specification and timing of the surveys to be agreed with the roads authority.
- Reinstatement of all roads to their pre-works condition or better and to the satisfaction of the roads authority on completion of the construction works.
- Site Inductions to address traffic management and provide guidance on the routes to be used/not used to access the site.
- Maintenance of a 24-hour emergency phone number for the duration of the construction works.

- Planning and execution of all necessary temporary traffic management in accordance with best practice, including the Traffic Signs Manual.
- Letter drops to notify members of the public living near the proposed site and cable route of any particular upcoming traffic related matters (e.g. temporary lane/road closure or delivery of turbine components).
- Provision of clear signage for accessing the site.
- Use of a road sweeper to maintain the public roads in a clean condition.
- Securing of site entrances when not in use and use of a flagman to assist traffic movements at the site entrance or in other areas, as required.
- Delivery of abnormal loads in accordance with an abnormal load permit and at times and frequencies directed by An Garda Siochána.

9.11.22. The proposed mitigation measures for the associated grid connection works include: completion of road works in line with a road opening license; route proofing, including slit trenching with the aim of avoiding existing services in the road; maintenance of local access at all times during any road closures associated with the grid connection works; measures to prevent soil/dirt generated during the works from being transported on the public road; temporary trench reinstatement; surface overlay after reinstatement; grid connection works will be planned to avoid conflicts with other major activities on the main construction site such as concrete foundation pours and large component deliveries; liaison with Coillte forestry operators to ensure no conflicts occur between felling and construction operations; signposting of diversion routes where short rolling temporary road closures are required on local roads.

9.11.23. The proposed mitigation measures for the associated turbine delivery route include: submission of a programme of deliveries to the roads authority in advance of deliveries of turbine components to the site to include details of the dates, times and route of each component delivery; deliveries during off-peak times using a convoy and a specialist heavy haulage company; escort by An Garda Siochána; reinstatement of any area affected by the works to its original condition; advance consultation with the local residents and Carlow County Council.

9.11.24. During the operational phase, no further mitigation measures are considered necessary.

9.11.25. During the decommissioning phase, the proposed mitigation measures will be in line with those identified for the construction phase. It is proposed to agree a decommissioning plan with the planning authority in advance of decommissioning, to include traffic management measures.

9.11.26. Residual Impacts

9.11.27. No significant residual impacts during construction, operation or decommissioning are anticipated.

9.11.28. **Assessment**

9.11.29. Construction Traffic

9.11.30. Having regard to the nature and scale of the proposed development, it is clear that the greatest potential for negative impacts on traffic and transportation arises during the construction phase, since there will be minimal traffic generated during the operational phase. I note that the Planning Authority's third reason for refusal related to the inadequate capacity and design of the local road network to accommodate the proposed volume and frequency of HGV construction traffic. The Planning Authority considered that the proposed development would have a significant adverse impact on the local road network and endanger public safety by reason of traffic hazard.

9.11.31. A number of third party appellants and observers have also raised issues relating to traffic and transportation, including road safety, capacity to accommodate HGV traffic, and impacts on other road users, including pedestrians and cyclists.

9.11.32. In their first party appeal, the applicant has proposed an amended HGV haul route from that outlined in the EIAR, with all HGV construction traffic facilitated from the east, via the N80 National Road and L2026 Barker's Road. The applicant has also submitted a survey identifying 24 No. potential locations along the L2026 where the safe passing of a car and a HGV, at a minimum, is possible. They note that the L2026 was previously used to construct the existing Greenoge Wind Farm and that it is also used for HGV traffic associated with forestry and agricultural activities.

9.11.33. The existing carriageway width on the L2026 to the east of the site entrance ranges from 3m to 6.5m and the 24 No. passing locations identified by the applicant

include existing passing bays, areas with a widened paved surface such as junctions or field entrances or areas where the width of the road was measured at 5m or greater, which would allow two cars or a car and HGV to pass.

9.11.34. In order to address the issue of two HGVs meeting along the L2026, it is proposed to monitor and manage the timing of HGV movements to/from the site, limiting the number of trucks on the L2026 at any one time, and to position flagmen at locations along the L2026, with co-ordination by a Traffic Management Co-ordinator in compliance with a TMP.

9.11.35. I note that, as outlined in Section 6.3 above, the Planning Authority considers that the applicant has not adequately addressed refusal reason No. 3 in their first party appeal, and they outline various issues.

9.11.36. A number of observers also state that various proposed passing points identified by the applicant are within their ownership, comprise entrances to their properties, are unsuitable for passing HGVs and that they do not consent to such use. Notwithstanding the observers' statements, there remain numerous passing opportunities. Given that the local road to the east of the site is generally in reasonably good condition and that there are numerous passing opportunities beyond those noted by the observers, I consider that construction traffic management could be addressed through engagement with the local authority, timing of HGV movements, use of convoy systems, flag men etc. Given the short term and temporary nature of the impacts, I consider that a robust Construction Traffic Management Plan could adequately address the concerns expressed by the Planning Authority and the third parties. I note, in this regard, that the adjacent Greenoge Wind Farm was previously constructed using the same local road network. While the turbines in that wind farm are significantly smaller than those proposed in this case, the nature of the civil and infrastructure works is similar.

9.11.37. With regard to the issue of consent, I note Section 34(13) of the Act, which states that a person shall not be entitled solely by reason of a permission to carry out any development. Should the Board decide to grant permission, the developer will still have to be certain under civil law that they have all necessary rights or consents to execute the grant of permission.

9.11.38. With regard to potential conflicts between wind farm construction traffic and local road users including school children, farmers, tourists etc. I note the c. 12-18 month construction period, the sparsely populated rural nature of the site and the low level of traffic currently utilising the roads. This is fundamentally a construction management issue and while I accept that there are likely to be short-term temporary negative impacts on the receiving environment due to construction traffic, they are of a type that lend themselves to effective mitigation through a comprehensive CTMP and suitable planning conditions. As noted above, the same roads have previously been used to construct Greenoge Wind Farm and there is therefore no fundamental reason, in my opinion, why they could not be used to construct the proposed development, notwithstanding the larger size of the proposed turbines.

9.11.39. Road Condition

9.11.40. The Planning Authority has raised concerns with regard to the condition of the local road network and potential impacts on road surfaces and drainage. The applicant has proposed to undertake pre- and post-construction condition surveys to a specification and timing to be agreed with the local authority and to reinstate all roads to their pre-construction condition or better to the satisfaction of the local authority.

9.11.41. I note that such surveys and reinstatement requirements, including the imposition of bonds for the satisfactory completion of such works, have been imposed by the Board on other wind farm developments, by way of condition. Given that wind farms are typically located in relatively remote rural areas accessed by local roads, I consider such controls to be reasonable and appropriate given the temporary nature of construction works and the negligible level of operational traffic that such developments generate. This matter can be adequately addressed by way of condition, should the Board be minded to grant permission.

9.11.42. Construction Traffic Volumes

9.11.43. The average number of HGV trips per day for the wind farm (excluding the grid connection works which will take place separately) is 21, increasing to 32 during peak construction periods. Spread over a typical work day, and notwithstanding the generally narrow road width of the L2026, I do not consider this to be such a significant volume of additional traffic on the existing road network as to warrant

refusal of permission. There may be times, such as during the pouring of the turbine foundations, where HGV movements are concentrated, due to the need to complete sizable concrete pours in a timely manner. However, noting that only 7 No. turbines are proposed, such occurrences would be limited in number and duration and would be capable of being mitigated to an acceptable level by means of agreement and implementation of a CTMP.

9.11.44. It is contended by a number of parties that the EIAR has failed to consider the traffic impacts associated with the required forestry felling. This is not the case and it is stated in Section 13.5.2.1 of the EIAR that “for the purposes of assessing worst case, it has been assumed that clearance felling for the project shall take place at the start of the construction programme in advance of the commencement of the main balance of plant construction works”.

9.11.45. With reference to my assessment of soils and geology (see Section 9.6), it appears that the proposed on-site borrow pit would not be capable of providing the quantity of stone stated in the EIAR. For the purposes of this assessment, it is therefore assumed that the shortfall will be made up with additional imported stone, resulting in additional HGV movements.

9.11.46. Notwithstanding this, I note that the EIAR includes a number of conservative assumptions, such as the compression of traffic volumes over a 12 month construction period, rather than the 12 – 18 months expected. This results in a greater number of HGV movements per day than is likely to be the case in reality. It also assumes that all HGV traffic associated with the entire project passes along each of the approach roads, which obviously cannot be the case. The re-use of existing forestry tracks will also reduce the quantities of stone material that need to be imported to the site. Subject to agreement and implementation of a robust CTMP, I do not consider that the additional HGV traffic arising from the undersizing of the borrow pit is likely to result in a significant effect on the local road network.

9.11.47. With regard to turbine component deliveries, the total number of such movements will be limited given that only 7 No. turbines are proposed, and the specialised nature of such deliveries means that it will be done under highly controlled circumstances, with a convoy, escort vehicles, garda escort etc. The applicant contends that the Route Survey Report and swept path analysis submitted

with the EIAR verifies that turbine component deliveries can be accommodated with temporary accommodation works. These accommodation works do not form part of the proposed development before the Board but are assessed within the EIAR. The applicant also notes that the turbine deliveries will be abnormal in terms of dimensions but not in terms of weight.

9.11.48. It is a matter for the applicant to obtain the necessary consents to implement the required accommodation works, but noting the information submitted and the presence of the existing Greenoge Wind Farm which was constructed using the same local roads, I am satisfied that the suitably controlled delivery of turbine components can be achieved without impacting on public safety by reason of a traffic hazard or otherwise impacting on traffic and transportation. While the proposed turbines are considerably larger than those utilised in Greenoge, the increased availability of specialised equipment, such as blade lifting trailers, allows for tighter swept curves to be achieved.

9.11.49. Should the Board be minded to grant permission, I recommend that conditions be included requiring that the Construction Traffic Management Plan be updated prior to the commencement of development and submitted for the agreement of the planning authority, to include:

- All HGV traffic associated with the proposed development shall be facilitated from the east only, via the N80 National Road and the L2026 Barker's Road.
- Clear signage shall be placed along the L2026 at locations where forward visibility is limited in agreement with the planning authority.
- A suitable number of passing locations along the L2026 between the site entrance and the N80 shall be identified to the satisfaction of the planning authority. The developer shall obtain all necessary consents for the use of any such lands and for any accommodation works that may be required.
- Protocols and monitoring measures shall be put in place to ensure that HGV traffic travelling to and from the site is suitably controlled so as to minimise the likelihood of HGVs meeting head-on on the L2026. This shall include the placement of suitably trained personnel at locations along the L2026 to be agreed with the planning authority.

- A pre-construction and post-construction survey of the local roads utilised during the construction phase shall be undertaken. The extent, specification and timing of the survey shall be agreed with the planning authority. Any damage to the road, drainage, boundaries or associated features of the public road shall be rectified at the developer's expense to the satisfaction of the planning authority.
- Communications and complaints protocols to ensure that local residents are aware of the construction programme, haul routes, traffic control measures and to provide contact details for complaints or queries.
- Appointment of a dedicated Traffic Management Co-ordinator whose role shall include implementation and monitoring of the TMP, acting as a point of contact for the planning authority, other relevant bodies and members of the public in relation to traffic and transportation matters.
- Provision of a wheelwash facility within the site and measures to prevent soiling of public roads, including the covering of loads and the use of road sweepers, as required.

9.11.50. I also recommend that a condition be included requiring the payment of a bond to ensure the satisfactory reinstatement of public roads following completion of the construction phase.

9.11.51. Subject to the mitigation outlined in the EIAR and the abovementioned recommended conditions, I consider that there would be a negative impact on the locality due to the construction traffic, but that this can be mitigated such that the impacts would not be significant. I consider that the short-term negative impacts of construction traffic would be outweighed by the long-term positive impacts of a renewable energy project.

9.11.52. <u>Operational Traffic</u>

9.11.53. In the operational phase I concur with the applicant's assessment that the impacts will not be significant, due to the nature of the proposed development and the minimal traffic it will generate. With regard to the decommissioning phase, the nature of works will be similar to the construction phase, but the extent of works will be substantially less due to the foundations and other infrastructure being left in situ.

I am satisfied that, subject to compliance with a decommissioning plan to be agreed with the planning authority, the traffic impacts associated with the decommissioning phase would not be significant.

9.11.54. Conclusion

9.11.55. I have considered all of the written submissions made in relation to traffic and transportation and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on traffic and transportation can be avoided, managed and/or mitigated by measures that 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 impacts on traffic and transportation.

9.12. Material Assets, Cultural Heritage and the Landscape – Archaeology, Architectural and Cultural Heritage

9.12.1. Archaeology, Architectural and Cultural Heritage are addressed in Chapter 14 of the EIAR.

9.12.2. A desktop study was undertaken within a 2km radius of the main wind farm site. There are no recorded monuments or archaeological features within the wind farm site boundary, however the EIAR identifies 9 No. recorded archaeological sites located within the 2km study area around the wind farm site. Only one of these recorded features, which comprises a standing stone, is located within 1km of a proposed turbine location, c.560m west of proposed Turbine 2. None of these recorded archaeological sites are designated as National Monuments or have been assigned Preservation Orders.

9.12.3. The recorded archaeological sites, the townland within which they are located, and their approximate distance from the nearest proposed turbine are as follows:

- Standing stone (CW020-028), Rossacurra, 0.56km to west.
- Enclosure (CW020-008), Kilbrannish North, Kilbrannish South, 1.49km to south.
- Ringfort – rath (CW017-005), Aclare, 1.64km to north.
- Burial ground (CW020-009), Kilbrannish South, 1.7km to south

- Standing stone (CW020-022), Kilbrannish North, 1.7km to southeast.
- Enclosure (CW017-040), Myshall, 1.80km to northwest.
- Racecourse (CW017-041), Myshall, 1.84km to northwest.
- Children's burial ground (CW017-045), Myshall, 1.92km to north.
- Burial ground (CW020-020001), Kilbrannish South, 2km to south.

9.12.4. Within a wider 10km area, the EIAR identified the following 3 No. monuments which may have potential visual alignment, within the environs of Mount Leinster to the south west:

- Possible cursus (CW020-027), Coolasnaghta, 2.63km to southwest.
- Possible cursus (CW020-026), Coolasnaghta, 4km to southwest.
- Stone row 'the Nine Stones' (CW020-017), Coolasnaghta, 2.95km to southwest.

9.12.5. With regard to architectural heritage, the closest protected structure is Hollybrook House, c. 2.1km north west of the nearest turbine. This is a 18th century five-bay, two-storey house and there are no curtilage features or attendant grounds associated with the house that extend into the wind farm site.

9.12.6. With regard to potential unrecorded archaeological sites, a review of historic mapping and LiDAR imagery did not identify any such sites or features. The applicant also notes the ground disturbance that occurred when the forestry plantation was created, and the likely further disturbance caused by root growth. A field survey was also undertaken, with nothing of archaeological interest noted beyond the recorded features listed above.

9.12.7. I note that the assessment within the EIAR also considers the grid connection route and turbine delivery route (TDR) works, which are not part of the proposed development, as well as the forestry replanting, which again is not part of the proposed development before the Board. The grid connection route is primarily along local roads and there are no recorded archaeological sites on these roads or the short areas of greenfield land that would be traversed. There are, however, a number of sites in the vicinity of the grid connection although these have no recorded known features extending into the road. With regard to the TDR, there are numerous

sites within the M11 roadtake, which were excavated prior to construction of the road. The TDR also passes through Bunclody, which contains a number of structures recorded in the NIAH and/or RPS. A section of the L2026, along which the TDR passes, extends through the centre of an archaeological enclosure. Minor widening works of a narrow grass verge and the construction of a temporary bridge are proposed in this area.

9.12.8. With regard to potential impacts, the 'do-nothing' scenario will see the continued preservation of recorded and potential cultural heritage features within the study areas. No significant direct or indirect impacts on the identified cultural heritage assets are predicted from the proposed wind farm development during construction or operation, due to separation distances and the lack of any such features within the application site.

9.12.9. With regard to unrecorded sites and features, the EIAR considers there to be a low potential for these to occur within the site, given the ground disturbance associated with the forestry plantation. While the level of any potential is indeterminable, the EIAR states that there is potential for permanent, direct, negative effects on any sites that may be present.

9.12.10. Cumulative Impacts

9.12.11. With regard to potential cumulative impacts, the EIAR considered the grid connection works, turbine delivery route and replant lands, as noted above. The cumulative impact with the existing Greenoge Wind Farm was also considered. There was no record of licenced excavations of any previously unrecorded sites during construction of the Greenoge development and no archaeological monuments with potential visual alignments towards the combined locations of the existing Greenoge Wind Farm and the proposed Croaghaun wind farm were identified. The archaeological assessments of a proposed battery storage development at Kellistown substation (Reg. Ref. 1823) and a proposed solar farm (Reg. Ref. 20143) located 1.5km to the south of Kellistown substation were also reviewed. The assessments concluded that those projects would not result in any direct impacts on the archaeological or architectural heritage resources and archaeological monitoring during the construction phase was recommended at both locations. The EIAR

concludes that the proposed development will not result in any predicted significant cumulative impacts on the cultural heritage resource.

9.12.12. Mitigation Measures

9.12.13. In order to mitigate the potential for impacts on unknown or unrecorded archaeology, an advance programme of archaeological site inspections is proposed within all development areas following pre-construction tree felling in order to assess whether there are any visible surface traces of any potential unrecorded archaeological or architectural heritage sites. It is also proposed that archaeological monitoring of ground excavation works during the construction phase will be carried out under license by the National Monument Service. If any sub-surface archaeological features are identified during these site investigations they will be recorded and cordoned off while the NMS are consulted to determine further appropriate mitigation measures, which may include preservation in situ or preservation by record. A similar approach to archaeological monitoring is proposed for the grid connection works and the turbine delivery route works.

9.12.14. Residual Impacts

9.12.15. Following mitigation, no significant residual effects are anticipated.

9.12.16. **Assessment**

9.12.17. Given the lack of recorded cultural heritage features within and in the vicinity of the wind farm site, I concur with the conclusions of the EIAR. I note that one of the observers contends that Ordnance Survey maps indicate two forts located within the site boundary which the EIAR failed to identify. This appears to be a misunderstanding by the observer of the legend on the OS maps. The triangular symbols on the maps identify the locations of trigonometrical stations, not forts. I am satisfied that the applicant has adequately identified all known archaeological features within the vicinity of the site.

9.12.18. Save Mount Leinster, in their appeal, query the extent of surveying undertaken and raise the potential for impacts on unrecorded features or sites. In support of their position, they include a letter from Professor Kevin Whelan of Notre Dame Global Gateway Dublin. I note that the monitoring approach set out in the EIAR would be consistent with that recommended by the Department of Tourism, Culture, Arts, Gaeltacht, Sport & Media in their submission to the Planning Authority

and I consider that it is a reasonable and proportionate approach to the potential for impacts on unknown subsurface remains or sites. I recommend that such archaeological monitoring should be explicitly required by way of condition, should the Board be minded to grant permission.

9.12.19. Save Mount Leinster also raise the potential impacts on other structures including the Church of Christ the Redeemer in Myshall, Huntington Castle Clonegal and Altamount House and Gardens, as well as the impact on Myshall more generally. These issues are also addressed in the Landscape and Visual Impact assessment below, however, having regard to the separation distances, the intervening topography and hedgerow/treeline vegetation, I am satisfied that the proposed development will not have a significant direct or indirect impact on these architectural and cultural heritage features.

9.12.20. Conclusion

9.12.21. I have considered all of the written submissions made in relation to archaeology, architectural and cultural heritage and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on archaeology, architectural and cultural heritage can be avoided, managed and/or mitigated by measures that 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 impacts on archaeology, architectural and cultural heritage.

9.13. Material Assets, Cultural Heritage and the Landscape – Landscape and Visual Impact

9.13.1. Landscape and Visual Impacts are addressed in Chapter 15 of the EIAR.

9.13.2. The EIAR generally considers landscape and visual impacts within a 20km radius study area, in accordance with the recommendations of the WEDG 2006 for blade tips greater than 100m. The exception to this is Vinegar Hill, which is located c. 22km southeast of the site. Given the importance of this site it is included as a receptor, even though it falls outside of the study area. In order to focus on receptors and effects within the central study area where there is higher potential for significant impacts to occur, the EIAR also defines a ‘central study area’ within 5km of the site.

9.13.3. The impact classification system is stated to be based on the IEMA Guidelines for Landscape and Visual Impact Assessment (2013). The impact significance matrix (see Table 15.3 of EIAR) ranges from 'Imperceptible' to 'Profound', with judgments of 'Substantial' and above considered to be 'significant impacts' in EIA terms.

9.13.4. The wind farm site is situated in an upland context in the northern foothills of the Blackstairs Mountains, extending across Croaghaun Hill, which rises to a max elevation of 455m AOD. The terrain to the north and west of the site descends towards the lowlands of County Carlow, whilst a collection of rolling hills at similar elevations occur immediately east of the site. Immediately south of the site the terrain transitions to the principal ridgeline associated with the Blackstairs Mountains which is oriented in a general north-south direction and denotes the county boundary between Carlow and Wexford. Mount Leinster is the highest peak in the Blackstairs rising to a height of 794m AOD and begins to ascend from its foothills c. 2km south of the site.

9.13.5. Beyond the central study area, much of the wider study area constitutes a relatively flat landscape with small streams, river valleys, and isolated rolling hills. To the east and northeast of Bunclody the terrain transitions to a rolling landscape of low hills and ridgelines. Similarly, across the county border with Kilkenny in the south western quadrant of the study area, the terrain rises from the Barrow river valley and is contained in low rolling hills and ridgelines.

9.13.6. The proposed wind farm site is primarily located across an area of commercial conifer forest, while the surrounding hillsides include moorland, commercial forestry and pastoral farmland on lower slopes. The primary land use within the study area is also pastoral farmland, with a patchwork of small agricultural fields, increasing in size as the terrain levels out, as well as smaller blocks of commercial conifer plantations.

9.13.7. A number of urban settlements are situated within the central and wider study areas, the nearest of which are Myshall and Bunclody situated to the north and east of the site respectively. There are also existing wind energy developments within the central and wider study area, including the existing Greenoge Wind Farm situated immediately east of the site, whilst several existing wind energy developments are located along the upper slopes of rolling hills and ridgelines in the eastern half of the study area in Counties Wicklow and Wexford.

9.13.8. The EIAR states that the nearest residential dwelling to any of the proposed turbines is 984m which exceeds and fully complies with the setback distance outlined in the both the current WEDG 2006 (500m) and the Draft WEDG 2019 (500m or 4 times the tip height) for visual amenity purposes.

9.13.9. The EIAR notes that the site is located within the Blackstairs and Mount Leinster Uplands Landscape Character Area which is described as the most important LCA in the county, highly sensitive to change with a low capacity to absorb wind turbines. Given the site location, the EIAR also identifies the LCAs in the surrounding Counties of Wexford, Wicklow and Kilkenny.

9.13.10. A Zone of Theoretical Visibility (ZTV) map for the 20km study area is included in Figure 15.12 of the EIAR, based on bare ground terrain data. The ZTV map utilises colour coding to identify areas where different numbers of turbines will be visible, and it indicates that the most notable areas of comprehensive visibility occur in the immediate surrounds of the site on the adjacent hills and ridges to the north and south, and in the wider northern and western half of the study area where the terrain is typically flat to low-rolling. Immediately east and west of the site, visibility reduces, with areas of no visibility occurring in the surrounds of Myshall. There is also limited visibility from the eastern extents of Bunclody, with no visibility form the central and western half of the town. The ZTV also indicates that there will be no potential for visibility of the proposed turbines for up to half of the wider southern extents of the study area where some of the more visually sensitive upland features occur, due to screening by neighbouring ridges and hills. In County Wexford and along the Wicklow Mountains foothills in the wider eastern half of the study area, the ZTV pattern fluctuates between areas of no visibility and areas of comprehensive visibility, due to the rolling terrain. A corridor of no visibility also occurs along the River Barrow valley in the western half of the study area.

9.13.11. The EIAR considers that the northern half of the study area accounts for the largest area of comprehensive visibility within the study area, due to the flat/low-lying terrain and that there is the potential for comprehensive visibility to occur at the settlements of Ballon, Tullow and Carlow Town.

9.13.12. Route Screening Analysis (RSA) was also undertaken for roads within a 5km radius for the stated purpose of bridging the gap between the theoretical ZTV

visibility modelling and the actual nature of visibility. The RSA map included in Figure 15.13 of the EIAR illustrates an inverse relationship between 'Fully Screened' and 'Open' views with increasing distance. Beyond 2km, intervening vegetation is stated to restrict views from many routes.

9.13.13. With regard to 'Open' views, these are stated to range from just under 50% of road viewing scenarios within 1km to 15% at the 3-4km band, with a minor increase to about 18% occurs at the 4-5km band. The most notable section of 'open' views is stated to be located immediately south of the site along the L3005 local road. This is stated to reflect the elevated nature of this route and the location of the proposed turbines primarily on a south facing slope. The highest potential for 'open' views of up to 5-7 of the proposed turbines is stated to peak at the 2-3km band. Relating to the clear elevated views from the surrounds of the Nine Stones viewing point.

9.13.14. 37 No. Viewshed Reference Points (VRPs) were identified representing six categories of receptor type, including key views from features of national or international importance, designated scenic routes and views, local community views, centres of population, major routes and amenity and heritage features. The VRPs are illustrated in Figure 15.18 of the EIAR and the table below, collated from tables contained in the EIAR sets out their distance from the nearest turbine, the direction of view, the number of turbines nacelles visible, the sensitivity of each receptor, the magnitude of the visual impact and its significance.

9.13.15. With regard to mitigation measures, given the highly visible nature of wind energy developments, it is contended that it is not feasible to screen them from view using on-site measures. Instead, the two main forms of landscape and visual mitigation employed were mitigation by avoidance and design (through layout iteration and use of reverse-ZTV maps) and the use of buffers around residential receptors.

9.13.16. With regard to the significance of potential landscape impacts, the EIAR contends that this is Moderate within the central study area, while in the wider study area (i.e. beyond 5km from the site), the significance of landscape impact is not considered to exceed Slight, reducing to Imperceptible at increasing distances as the project becomes a progressively smaller component of the wider landscape fabric.

9.13.17. With regard to visual impacts, the sensitivity of the identified receptors varied from Low to High, with the highest sensitivity receptors tending to relate to outdoor recreationalists, such as hill walkers within the Blackstairs Mountains, sensitive heritage features, elevated areas with panoramic views across the surrounding landscape or designated scenic views.

9.13.18. A total of 16 of the 37 views are deemed to have low range significance judgements (Slight-imperceptible/Imperceptible). These are typically long distance views or views where the proposed turbines are heavily screened by a combination of terrain and intervening vegetation.

9.13.19. Of the remaining views, 3 No. are rated as 'Substantial-moderate' (VP24, VP25, VP29). These typically relate to views from the Blackstairs Mountains within the central parts of the study area which are representative of a mix of scenic designations and amenity and heritage features. VP29, from the Nine Stones viewpoint, is stated to be the most highly sensitive visual receptor within the central and wider study area. It is stated that, whilst the proposed wind farm will be a prominent feature of this view and will notably intensify the degree of built development visible from here, the turbines will not be viewed in the most sensitive aspect of this scenic designation which is to the west/northwest.

9.13.20. A number of local community views (VP13, VP19, VP20 and VP30), representing people who live, work and move around the area within the central study area were rated as experiencing a 'Moderate' impact significance. Although not a local community view, VP33 also received a 'Moderate' impact significance. Several other views are rated as having 'Moderate-slight' impact significance judgements, typically representing middle to long range views within the study area.

9.13.21. The EIAR notes that in the majority of instances the proposed turbines will be viewed in the same context as the existing Greenoge turbines and that the assessment is therefore both a cumulative assessment of both the proposed and existing wind farms as it is an assessment of the proposed wind farm. It contends that both developments appear together in a relatively clear and comprehensible manner with little apparent scale confusion, despite the fact that the existing turbines are considerably smaller in scale.

9.13.22. It is stated that a large part of some of the more sensitive areas within the study area will afford no visibility of the proposed development, including much of the Blackstairs Mountains south of Mount Leinster and considerable lengths of the River Barrow and River Slaney corridors. Where the proposed turbines are visible, it is stated that significant visual impacts are not considered to occur on the basis that the proposed turbines are well sited in a robust and transitional part of the study area that can accommodated a development of this scale and nature.

9.13.23. The proposed on-site substation is stated to have a negligible residual visual impact, on the basis that it will be heavily screened by the surrounding plantation forest and will be barely visible.

9.13.24. Cumulative Impacts

9.13.25. With regard to cumulative landscape and visual impacts, the EIAR notes 13 No. operational wind farms and 1 No. permitted wind farm within the study area. These are listed in Table 15.11 of the EIAR. Given the absence of other tall structures within the study area, the EIAR considers that there is no potential for in combination effects with other types of development. An assessment of cumulative visual impacts is provided in the EIAR, utilising a cumulative ZTV map (see Appendix 15.2 of the EIAR) with analysis from each of the VRPs regarding the number of wind farms visible and whether there is a combined view, a succession view or a sequential view (see Table 15.12 of EIAR). Overall, the EIAR contends that the proposed development will contribute an additional cumulative effect that is in the order of Medium-Low.

EIAR Assessment of Visual Impacts **Source: Tables 15.8 and 15.9 of EIAR**							
VRP No.	**Location**	**Distance to Nearest Visible Turbine**	**Direction of View**	**No. of Turbine Nacelles Visible**	**EIAR Visual Receptor Sensitivity**	**EIAR Visual Impact Magnitude**	**EIAR Significance of Visual Effect**
VP1	L3053 overbridge of M9 at Moyle Big	17.13km (T1)	SE	6	Low	Low-negligible	Slight-imperceptible
VP2	L20201 south of Tullow	13.54km (T1)	S	7	Medium-low	Low-negligible	Slight- imperceptible
VP3	River Barrow at Leighlinbridge	16.68km (T3)	SE	0	Medium	Negligible	Imperceptible
VP4	L2035 at Ballon	7.67km (T1)	S	5	Medium-low	Low	Slight
VP5	Wicklow Way at Aghowle	13.33km (T6)	SW	7	Medium	Low	Slight
VP6	Local road at Shankill, west of M9	19.42km (T3)	E	6	High-medium	Low-negligible	Slight-imperceptible
VP7	L3049 at Fenagh	8.27km (T3)	SE	7	Medium-low	Low	Slight
VP8	Ballymoon Castle	10.50km (T3)	SE	3	Medium	Low-negligible	Slight-imperceptible
VP9	R724 north of Shangarry Crossroads	4.57km (T1)	SE	6	Medium-low	Medium-low	Moderate-slight
VP10	R725 at Carnew	16.75km (T6)	SW	7	Medium-low	Low-negligible	Slight-imperceptible

VP11	R724 at Myshall	2.88km (T1)	SE	0	Medium	Low-negligible	Slight-imperceptible
VP12	Adelaide Memoral Chruch, Myshall	2.73km (T1)	SE	0	Medium	Low-negligible	Slight-imperceptible
VP13	L7109 east of Myshall	1.98km (T1)	S	5	Medium-low	Medium	Moderate
VP14	N80 northwest of Kildavin	4.26km (T6)	SW	6	Medium-low	Medium-low	Moderate-slight
VP15	Huntington Castle	6.48km (T6)	SW	7	Medium	Medium-low	Moderate-slight
VP16	Watch House Village, Clonegal	7.57km (T6)	SW	7	Medium-low	Low	Slight
VP17	L2027 at Kildavin GAA	4.92km (T6)	SW	6	Medium	Medium-low	Moderate-slight
VP18	L7005 south east of Ballinrush Crossroads	2.98km (T3)	SE	2	Medium-low	Low	Moderate-slight
VP19	L60665 at Cranemore	1.85km (T6)	SW	5	Medium-low	Medium	Moderate
VP20	L20281 at Ballypierce	2.56km (T6)	SW	5	Medium	Medium	Moderate
VP21	L70221 at Sliguff	10.56km (T3)	E	4	Medium	Low	Slight
VP22	St Lazerian's Church, Drumphea	4.83km (T3)	E	4	Medium	Medium-low	Moderate-slight
VP23	L30011 at Coolasnaghta	2.43km (T3)	NE	4	Medium	Medium-low	Moderate-slight
VP24	Carpark west of Carroll's Crossroads	0.39km (T3)	NE	6	High-medium	High-medium	Substantial-moderate

VP25	L2026 Local road at Kilbranish	0.71km (T7)	N/NW	6	High-medium	High-medium	Substantial-moderate
VP26	Bunclody Football Club	5.57km (T6)	W	0	Medium-low	Negligible	Imperceptible
VP27	Local road at Gorteen south of Brady's Cross Roads	7.15km (T6)	W	0	Medium	Low-negligible	Slight-imperceptible
VP28	Slieveboy Loop Walk	17.01km (T6)	W	6	Medium	Low-negligible	Slight-imperceptible
VP29	Nine Stones viewpoint	2.99km (T3)	NE	7	High	Medium	Substantial-moderate
VP30	Local road at Kilbranish south	2.01km (T7)	NW	6	Medium	Medium	Moderate
VP31	L2006 at Clohamon	8.55km (T6)	NW	2	Medium-low	Low-negligible	Slight-imperceptible
VP32	Local road at Ballinavocran	5.74km (T6)	NW	6	Medium-low	Medium-low	Slight
VP33	Mount Leinster	4.48km (T3)	N	7	High	Medium-low	Moderate
VP34	Woodlawn Park, Borris	12.84km (T3)	NE	1	Medium-low	Low-negligible	Slight-imperceptible
VP35	R745 west of Ferns	16.97km (T6)	NW	5	Medium-low	Low-negligible	Slight-imperceptible
VP36	L8245 at Ballynakill south of Graiguenamanagh	19.53km (T3)	NE	0	Medium	Low-negligible	Slight-imperceptible
VP37	Vinegar Hill, Enniscorthy	22.01km (T6)	NW	5	High-medium	Low-negligible	Slight-imperceptible

Note: EIAR considers judgements of 'substantial' and above to be 'significant impacts' in EIA terms. See impact significance matrix at Table 15.3 of EIAR.

9.13.26. **Assessment**

9.13.27. Further Information

9.13.28. In response to the Board's request for clarification on turbine dimensions, the applicant submitted a number of additional comparative photomontages for various combinations of hub height, rotor diameter and tip height within the proposed turbine range. The applicant contends that the submitted LVIA comfortably covers the range of turbine dimensions and provides a comprehensive assessment.

9.13.29. Having reviewed the submitted comparative photomontages, I agree with the applicant that it is very difficult to visually discern any difference in turbine dimensions between the different scenarios, given the scale of the structures and the relatively minor variations in dimensions. I am therefore satisfied that the LVIA contained in the EIAR is sufficient to allow proper consideration of landscape and visual impacts regardless of the final turbine chosen within the specified turbine range.

9.13.30. Reason for Refusal and Appeals

9.13.31. The landscape and visual impacts of the proposed development were raised by many of the third party appellants and observers. This issue also formed the basis of one of the Planning Authority's reasons for refusal. They considered that the proposed development would have an adverse visual impact on the Blackstairs and Mount Leinster Uplands LCA and result in very significant landscape and visual impacts on designated scenic routes 10, 11, 12 and 16, and designated protected views 1, 4, 24, 29, 30, 35, 36, 38, 39, 41 and 42 as identified in the Development Plan then in effect. The Planning Authority considered that the proposed development would adversely interfere with the character of the landscape and would contravene the Landscape Character Assessment and Schedule of Protected Views within the Development Plan and, accordingly, would be contrary to Heritage Policy 1 of the Development Plan which sought to 'protect designated Views, Prospects and Scenic Routes in the county as appropriate'.

9.13.32. The Planning Authority's assessment of this issue was informed by a report prepared on their behalf by CAAS Ltd., a copy of which is on file. Appendix 2 of the first party appeal comprises a further report from the authors of the LVIA, Macro Works Ltd., which is stated to be a detailed rebuttal of the CAAS report.

9.13.33. I note that the EIAR states that Appendix 15.1 contains a textual assessment for each viewpoint. However, it appears that this information was omitted from the submitted planning application. Nevertheless, I consider that there is sufficient information between the summary Table 15.9 of the EIAR, the accompanying EIAR explanatory text and the photomontages to understand and assess the applicant's assessment of visual impacts.

9.13.34. Development Plan Policies on Landscape and Visual Matters

9.13.35. As noted above, the Development Plan that was in place at the time of lodgement of the application has since been replaced by the Carlow County Development Plan 2022-2028. The Landscape Character Assessment remains unchanged, with the site still located within the Mount Leinster-Blackstairs Uplands area which is identified as having a level 5 (most sensitive) landscape sensitivity and a low capacity for wind farming. The Scenic Routes and Views in the vicinity of the site (and those referenced in the reason for refusal) remain unchanged.

9.13.36. Heritage Policy 1, referenced in the Planning Authority's reason for refusal, is no longer contained in the new Development Plan. However, I note the following policies:

- LA P2: Ensure that development will not have a disproportionate landscape or visual impact in sensitive upland areas of the County (due to siting, layout, design or excessive scale, height and bulk) and will not significantly interfere with or detract from scenic upland vistas, when viewed from the surrounding environment, including nearby areas, scenic views and routes, and from settlements.
- LA P3: Adopt a presumption against developments which are located on elevated or visually exposed sites or areas with open exposed vistas, and where the landscape cannot accommodate such development with appropriate mitigation.
- LA P4: Ensure that developments on steep slopes or ridges will not be conspicuous or have disproportionate landscape or visual impacts when viewed from the surrounding environment, including from nearby areas, scenic views and routes, and from settlements.

- LA P7: Facilitate, where appropriate, developments that have a functional and locational requirement to be situated on steep or elevated sites (e.g. reservoir, telecommunication masts or wind energy structures) where residual adverse visual impacts are minimised or mitigated.
- LA P11: Protect and preserve the established appearance and aesthetic attributes of views and prospects that contribute to the inherent quality of the County's landscape, including views, prospects and scenic routes listed in Tables 9.3 and 9.4, and particularly views to and from mountains, hills, river valleys and river corridors, and views of historical or cultural value (including buildings and townscapes) and views of natural beauty.

9.13.37. Potential Landscape Impacts

9.13.38. The Landscape Character Assessment for the County states that the Leinster-Blackstairs Uplands LCA has low capacity to absorb wind turbines, overhead cables and masts, particularly in the upland areas where they would detract from the scenery and visitors' experience of 'wilderness'. However, noting that there are significant and expansive existing man-made interventions in the landscape surrounding the site, including large-scale commercial forestry plantations and the existing Greenoge Wind Farm, I do not consider that this part of the Mount Leinster-Blackstairs Uplands LCA comprises a 'wilderness' landscape, as described in the LCA. In this regard I note the location of the appeal site relatively close to the north western extremities of the LCA, close to the 'Farmed Lowlands' LCA, and I concur with the applicant that the landscape of the study area exhibits transitional characteristics. I also concur with the statement in the EIAR that the landscape, whilst scenic and sensitive, has more characteristics of a typical working landscape of coniferous forest plantations, rolling pastoral farmland and existing wind farms, in comparison to the more naturalistic mountain moorland at Mount Leinster and its associated ridgelines further south, where an uplands 'wilderness' landscape can be experienced.

9.13.39. The Leinster-Blackstairs Uplands LCA covers a very extensive area with varying landscape characteristics. While it may, overall, be the most sensitive landscape character area in the County, this sensitivity is not uniform across the entire area in my opinion. Having inspected the site and surrounding areas and

having reviewed the information submitted by all parties, I would agree with the statement in the EIAR that the site and central study area have a Medium landscape sensitivity, with areas to the south of the site, in the vicinity of Mount Leinster increasing to High sensitivity.

9.13.40. The presence of the existing Greenoge Wind Farm is a key characteristic in the receiving landscape and it is notable from the photomontages that the proposed wind farm generally 'reads' to the observer as an extension or continuation of Greenoge, with a continued march of turbines across the landscape along similar ridges. While the existing turbines at Greenoge are substantially smaller than those proposed, they do, nevertheless, form an important anchoring element in the landscape and are representative of emerging trends. From more elevated areas many of the considerable number of existing wind farms in the study area are visible (see for example VP28 from the Slieveboy Loop Walk, Co. Wexford and VP33 from Mount Leinster and VP37 from Vinegar Hill, Co. Wexford), and I consider that these also form an important baseline characteristic of the wider landscape.

9.13.41. In terms of the significance of the potential landscape impacts, I note from the ZTV that visibility of the proposed development from the more sensitive landscape areas to the south is limited due to the screening effect of intervening terrain. The proposed development would have an impact on the landscape but noting the nature and characteristics of the receiving landscape as outlined above, I concur with the conclusion of the EIAR that the proposed development would have a Moderate landscape impact within the 5km study area, reducing beyond this as it becomes a smaller element of what is a complex and varied landscape. I therefore consider that the proposed development would not have an unacceptable impact on the receiving landscape.

9.13.42. The Save Mount Leinster appeal contends that the proposed development would be in breach of the European Landscape Convention. Having regard to my assessment above and the conclusion that I have reached, I do not agree with that contention.

9.13.43. <u>Potential Visual Impacts</u>

9.13.44. Having inspected the appeal site and surrounding area, including the various scenic routes and views, I note that the site sits within an uplands area comprising a

patchwork of commercial conifer plantations, agricultural grasslands, heath, hedgerows, and scattered residential and agricultural development. The existing Greenoge Wind Farm is a notable feature of the receiving environment, as are the various other wind farms within the wider area, when seen from elevated areas.

9.13.45. The EIAR, making use of ZTV maps, identities 37 No. VRPs. I consider this to be a suitably comprehensive range of viewpoints, having regard to the characteristics and visual sensitivities of the area and the various scenic views and scenic routes potentially affected. Having inspected the application site and surrounding area, I also consider the selection of the viewpoint locations to be reasonable and suitably representative of key receptors/viewpoints.

9.13.46. It is clear that the height and scale of the proposed wind turbines is such that they undoubtedly have the potential to impact on the visual amenities and character of the area. Furthermore, due to their scale, these impacts cannot be effectively mitigated (such as by screening vegetation). The careful locating, design and layout of the turbines is therefore the only effective means of reducing the impacts.

9.13.47. Appendix 2 of the first party appeal includes a response by MacroWorks (authors of the LVIA) to the CAAS Report that was prepared on behalf of the Planning Authority. MacroWorks note that the CAAS report was not supported by a site visit and contend that the CAAS assessment was not undertaken in accordance with industry standard guidance for LVIA and the WEDG. They also note that CAAS refer to the Greenoge Wind Farm as permitted, rather than existing, and contend that this has a major bearing on the receiving landscape against which the proposed development is assessed.

9.13.48. While CAAS prepared the LCA for the County Development Plan and are clearly very familiar with the landscape and visual characteristics and sensitivities of the county, I would query the robustness of a visual impact assessment of a particular development proposal that was undertaken without the benefit of a site visit. In support of this, I refer the Board to Table 1 of the MacroWorks response, which tabulates the various scenic views (SV) and scenic routes (SR) considered by CAAS to experience ‘very significant’ visual impacts, and which are explicitly referenced in the Planning Authority’s reason for refusal. The Table also identifies the relevant representative viewpoints and photomontages for each. It is notable

that, from a number of the Scenic Views and Routes identified in the reason for refusal, the proposed development will either not be visible (SV29, SV30, SR11), will only have a minimal view of blade tips (SV39) or will be seen at very substantial distances (13.5km for SV4 and 17km for SV24, where it is noted that the scenic view is in the opposite direction to the proposed development).

9.13.49. I consider that the two designated Scenic Views with the greatest potential to be significantly impacted are the view from the Nine Stones viewing area (Scenic View 42) and the view from south of Carroll's Cross (Scenic View SV41), both of which are on the South Leinster Way. SV42 is described in the Development Plan as a "vista west, panorama from car park across central plain" and SV41 is described as "vista west, panorama across central plain". These Scenic Views are close, and the applicant has combined them into a single Viewpoint VP29. It is notable that the particular significance and scenic nature of both views are the panoramic views they offer to the west, extending across the central plain of County Carlow. While the proposed turbines would be highly visible from VP29, with a distance to the nearest turbine of 2.99km, they would be located to the north east, while the scenic views is to the west. It is also of note that the existing Greenoge wind turbines are already visible from this location. I consider that the layout of the proposed wind farm seen from this location is such that it reads as a logical expansion of Greenoge, with a coherent and legible layout of existing and proposed turbines along a ridgeline. Considering the highly visible and relatively dominant nature of the turbines when seen from this location, but noting that the designated Scenic Views are panoramic vistas away to the west, I concur with the applicant's assessment that the significance of the visual impact can be described as 'Substantial - Moderate'.

9.13.50. With reference to the remaining Scenic Views referenced in the reason for refusal (SV1, SV35, SV36, SV38), my assessment is as follows:

9.13.51. With regard to Scenic View SV1, which is represented by Viewpoint VP17, this is described in the Development Plan as a "view southwest, of valley of River Slaney, Route of South Leinster Way". The proposed development is located southwest of this viewpoint, with the nearest turbines at a distance of c. 4.9km. The existing Greenoge Wind Farm is clearly visible from this location, albeit partially screened by topography. The proposed wind turbines appear as a continuation of the line of existing turbines, notwithstanding their substantially larger size, and they

are interpreted in a legible manner against a working landscape foreground that comprises a mosaic of commercial forestry and agricultural grassland. While the applicant considers this impact to be of Moderate - Slight significance, I would consider it to be of Moderate significance, i.e. not a significant impact in terms of EIA.

9.13.52. With regard to Scenic Views SV35 and SV36, these are described in the Development Plan as a "view south of heritage site (Ballymoon Castle) and a "vista east, panorama across central plain to Blackstairs", respectively. Due to the proximity of these two Scenic Views, they are represented by a single Viewpoint VP8. The nearest turbine is c. 10km from this Viewpoint, and while the majority of the turbines are visible to some extent from this location, the intervening topography substantially screens the majority of the turbines. The Scenic View towards Ballymoon Castle is to the south, while the proposed wind farm is 10km to the south east. I note that in the panoramic view from this location existing turbines are also visible in the distance. The applicant considers the visual impact to be of Slight - Imperceptible significance and I concur with this assessment.

9.13.53. With regard to Scenic View SV38, which is represented by Viewpoint VP9, this is described as a "view east, panorama with Killeshin Hills across central plain". The nearest turbine is c. 4.6km to the south east and the majority of the turbines will be visible, albeit with topography screening the turbines to varying degrees. I note that the existing Greenoge Wind Farm is partially visible from this location. I agree with the applicant's assessment that the turbines are clear and legible and have a sub-dominant visual presence due to the partial screening and with a significance rating of Moderate - Slight.

9.13.54. With reference to the remaining Scenic Routes referenced in the reason for refusal (SR10, SR12, SR16), my assessment is as follows:

9.13.55. Scenic Route SR10 is the Mount Leinster Drive on the L2026 local road which is described as views of the Blackstairs. The extent of the Scenic Route runs from Carroll's Cross Roads along the southern boundary of the appeal site, and eastwards along the L2026 in the direction of Bunclody. The applicant has chosen a Viewpoint VP25 to represent the Scenic Route. A number of the turbines are visible at a close distance from this Scenic Route, however the visual amenity and scenic

character of the route is very much established by the expansive views to the south towards the Blackstairs, rather than the somewhat limited and mundane views of conifer plantations and agricultural grassland to the north (i.e. the appeal site). Balancing the proximity to turbines with the nature of the scenic characteristics of route SR10, I would concur with the applicant that the significance of the visual impacts can be considered to be Substantial - Moderate, i.e. not significant in terms of EIA.

9.13.56. Scenic Route SR12 is along the L3011 local road and is described as views of the Blackstairs. The route is short and is located to the west of the proposed development, with a distance of c. 2.4km to the nearest turbine. The applicant has chosen a Viewpoint VP23 to represent this Scenic Route. The existing Greenoge Wind Farm is not visible from this location, and up to four of the proposed turbines will be partially visible over the intervening landforms. The Scenic Route is well enclosed by roadside hedgerow vegetation with the visual amenity provided by distant views of the Blackstairs, over which the proposed turbines will partially emerge. The proposed development would not be overly dominant from SR12 and I concur with the applicant's assessment of a Moderate - Slight impact, i.e. not significant in terms of EIA.

9.13.57. Scenic Route SR16 is part of the South Leinster Way along the L3005, which is described in the Development Plan as "scenic views in all directions of uplands". The extent of the Scenic Route runs in a general south west direction from Carroll's Cross Roads, past the Nine Stones viewing point. The applicant has chosen two Viewpoints, VP24 and VP29 (also used for Scenic Views SV41 and SV42) to represent the Scenic Route. From the northern part of SR16, a number of the proposed turbines will be readily visible and prominent, although the visual amenity and scenic character from this area derives, to a large degree from the expansive views to the east and west and southwards towards Mount Leinster. From the southern part of SR16, views towards Mount Leinster and the Blackstairs Mountains to the south dominate. Having regard to the character of this Scenic Route and the location and proximity of the proposed development to portions of the route, I would concur with the assessment of a Substantial - moderate significance, i.e. not significant in terms of EIA.

9.13.58. With regard to visual impacts more generally, other than designated Scenic Views and Routes, I note that while expansive views of the appeal site are available from many areas in the vicinity of this elevated site, these are not views of undeveloped and undisturbed 'wild' uplands, but rather views of a patchwork of mostly actively managed land uses, with commercial forestry being the most notable. The presence of the existing Greenoge Wind Farm is a key characteristic in existing views and as I have noted above, from many viewpoints the proposed wind farm 'reads' to the observer as an extension or continuation of this existing wind farm, notwithstanding the substantially larger turbines proposed. It is also notable that the route screening analysis undertaken by the applicant demonstrates that views of the proposed development will be partially or fully screened from many sections of local roads within 5km of the site due to intervening hedgerows and treelines. With regard to views from the village of Myshall, it is clear that only very fleeting views of the tips of particular turbine blades will be visible from the central areas of the village (see photomontages of Viewpoints VP11 and VP12. I do not consider that this would be a significant visual impact. With regard to visual impacts on residential dwellings in the area, I note that the minimum separation distance from any turbine is stated to be 984m which I consider to be adequate to protect residential amenity from any significant visual impact.

9.13.59. With regard to potential cumulative impacts, there are a total of 13 No. operational and 1 No. permitted wind farms within the wider 20km study area. The EIAR provides cumulative ZTV maps and an assessment of the nature of cumulative visibility from each viewpoint. The ZTV map indicates that, where the proposed development is clearly visible, it will be theoretically be seen together with at least one other wind energy development (noting the bare-ground basis of ZTV mapping). Within the central area this will generally be the Greenoge Wind Farm, due to its proximity and the above assessment considers the cumulative impacts of the two wind farms. There is a considerable cluster of existing wind farms in the vicinity of Bunclody, Co. Wexford, to the east of the appeal site. In views from this eastern part of the study area, the proposed development is generally viewed in combination with the existing Greenoge Wind Farm and/or the other existing wind farms (see photomontages VP5, VP10, VP28, VP35, VP37 for example). Having regard to the extent of this strongly established landscape and visual feature in the eastern portion

of the study area, I am satisfied that the proposed development would not result in a significant cumulative landscape and visual impact beyond that which already exists.

9.13.60. With regard to sequential cumulative impacts along linear receptors, such as the N80, the South Leinster Way and the Mount Leinster Heritage Drive and various local and regional roads in the study, I do not consider that these would be significant due to topography and the screening effects of roadside and field boundary hedgerows and treelines.

9.13.61. Conclusion

9.13.62. I have considered all of the written submissions made in relation to landscape and visual impacts and the relevant contents of the file including the EIAR. I am satisfied that the potential for landscape and visual impacts can be avoided, managed and/or mitigated by measures that 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 landscape and visual impacts.

9.14. The Interaction between the Above Factors

9.14.1. The interactions between the above factors is addressed in Chapter 17 of the EIAR. Generally, the interactions relate to construction phase effects, although some operational phase interactions are identified, including a number of positive effects, such as air quality & climate *and* population and human health. The interactions between the factors are graphically tabulated in Table 17-1 and described in Table 17-2 of the EIAR. No significant residual impacts associated with the interactions of environmental factors are identified.

9.14.2. Having regard to the nature of the proposed development, the receiving environment and the foregoing chapters of the EIAR, I am satisfied that the summary of the potential for interactions between environmental factors is reasonable.

9.15. Reasoned Conclusion

9.15.1. Having regard to the examination of environmental information contained above, to the EIAR and supplementary information provided by the applicant and the

submissions received, the contents of which I have noted, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows.

- **Population and Human Health:** Potential significant positive impacts on the socio-economic profile of the area due to community funding and investment; potential significant health and safety impacts during construction, operation and decommissioning that will be mitigated through the implementation of the measures set out in the EIAR, including the Construction Environmental Management Plan, best practice construction methods, appropriate training, installation of shadow flicker and ice detection systems on turbines, remote monitoring and scheduled maintenance.
- **Biodiversity:** Potential significant effects on habitats, mammals, bats, birds and aquatic ecology in the construction phase and bats in the operational phase which would be mitigated by the implementation of the mitigation measures contained in the Environmental Impact Assessment Report, including the Construction Environmental Management Plan, good practice construction measures, timing of vegetation removal, water pollution prevention measures, provision of bat boxes, use of buffer zones, biosecurity measures and the appointment of an Ecological Clerk of Works and Environmental Manager. Further pre-commencement biodiversity surveys are also proposed. Potential impacts on a possible area of Annex I European Dry Heath [4030] habitat can be avoided through the omission of Turbine T6 should the Board be minded to grant permission.
- **Land, Soils, Water, Air and Climate:** Potential significant effects on hydrology, hydrogeology and soils would be mitigated by a series of best practice construction management and pollution prevention measures and other specific measures outlined in the EIAR, including the Construction Environmental Management Plan, surface water management plan, use of buffer zones, erosion control and pollution prevention measures, and appointment of an Environmental Manager. Positive air quality and climate impacts are identified for the operational phase due to the offsetting of fossil fuels by the generation of renewable energy. Construction noise will be mitigated by the measures outlined in the CEMP, while cumulative operational

noise with the Greenoge Wind Farm will be mitigated by curtailment of turbine operation, if required.

- **Material Assets, Cultural Heritage and the Landscape:** Potential positive impacts on material assets due to the provision of new and upgraded recreational walking trails. Traffic impacts will be short-term and temporary and will be mitigated during construction by the measures set out in the EIAR, including the CEMP, Traffic Management Plan and appointment of a Traffic Management Co-Ordinator. Traffic impacts during the operational stage would be negligible. Potential impacts on unknown cultural heritage would be mitigated by archaeological monitoring with provision made for resolution of any archaeological features/deposits that may be identified. Landscape and visual impacts will arise but would be balanced to a degree by the nature and characteristics of the receiving environment including extensive commercial forestry, agricultural uses, the existing Greenoge Wind Farm and the nature and characteristics of the various Scenic Views and Scenic Routes in the area.

9.15.2. The EIAR has considered that the main significant direct and indirect effects of the proposed development on the environment would be primarily mitigated by environmental management measures, as appropriate. Thus, having regard to the foregoing assessment, I am, therefore, satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment.

10.0 Appropriate Assessment

10.1. 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.
- The Natura Impact Statement.

- Screening the need for Appropriate Assessment.
- Appropriate Assessment.

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

10.2.1. 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.

10.2.2. The proposed development is not directly connected to or necessary to the management of any European site and therefore is subject to the provisions of Article 6(3).

10.3. The Natura Impact Statement

10.3.1. The application included an 'Appropriate Assessment Screening Report and Natura Impact Statement' (Fehily Timoney, January 2021). Sections 1 – 5 of the document comprise an introduction, description of the project, methodology, and a description of the existing ecological environment. Section 6 comprises 'Stage One – Screening' report and Section 7 comprises 'Stage Two – Natura Impact Statement'.

10.3.2. The Board should note that, like the EIAR, the AA Screening Report and NIS relate to the overall project, i.e. the proposed wind farm development that is the subject of this appeal as well as the grid connection, turbine delivery route works and replant lands (in Counties Limerick and Sligo) that do not form part of the development for which permission is being sought.

10.3.3. Section 6 of the report comprises an AA Screening Report, which concludes that significant adverse impacts to the Slaney River Valley SAC (Site Code 000781), Blackstairs Mountains SAC (Site Code 000770), Lower River Shannon SAC (Site

Code 002165) and River Barrow and River Nore SAC (Site Code 002162) cannot be ruled out and that it is necessary to proceed toa Stage 2 Appropriate Assessment. The substantive NIS, contained in Section 7 of the report, outlines the methodology used for assessing potential impacts on the habitats and species within these European Site 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.

10.3.4. The NIS was informed by the following studies and surveys:

- A desktop study, including review of available information sources and datasets such as NPWS website, National Biodiversity Data Centre website, OSI mapping and aerial photography, waterbody catchments, Red List, Teagasc soil area maps, Bat Conservation Ireland records, Fisheries and South Eastern River Basin District datasets.
- Habitat surveys on a number of dates.
- Mammal walkover surveys and trail camera study.
- Avifauna field surveys, including vantage point watches (over 3 winter and 2 summer seasons), targeted distribution and abundance surveys for various bird species, walkover surveys, hinterland survey, tape-lure survey for Red Grouse and a night-time transects survey for crepuscular/nocturnal species.
- Bat surveys, including habitat assessment, preliminary and detailed roost inspections, transect surveys, static detector surveys.
- Aquatic ecology surveys, including walkover surveys, otter sign survey, electro-fishing, White-clawed Crayfish and Freshwater Pearl Mussel surveys, biological water quality sampling, biosecurity, replant lands survey.

10.3.5. It is stated that consultation was sought with Birdwatch Ireland, EPA, Inland Fisheries Ireland (IFI) and NPWS. The only response received was from IFI and is summarised in the NIS as follows:

> "[IFI] noted the main wind farm site encompasses the upper reaches of the Clashavey & Clody Rivers which drain to the Slaney, and Burren River, which

flows to the Barrow. The importance of both the Slaney and Barrow to aquatic species, in addition to their designation as SACs was highlighted. The importance of the Clody, Clashavey and Burren rivers as Salmon spawning systems was also stressed. A particular concern raised was the potential that peat soils/subsoils in the area are extremely sensitive to erosion. The importance of avoiding rather than mitigating erosion was stressed, and clarification on extent of excavations was requested; recommended biological sampling of watercourses rather than grab sampling; general observation that deleterious substances arising from construction activities could affect aquatic habitats and species unless proper safeguards are implemented; ensure that silt/suspended solids discharges are minimised; natural flow paths should not be interrupted; imported material for road construction should not be liable to break down and generate sediment; concrete operations be conducted in such a way as to prevent uncured concrete entering watercourse; all oils and fuels should be stored in secure bunded areas; oil/fuel spill kits should be carried by all plant and equipment; temporary oil interceptor facilities should be installed and maintained where site works involve the discharges of drainage water to receiving rivers and streams; adhere to the precautionary principle and environmental legislation."

10.3.6. The applicant's response to the request for further information addresses the implications of the proposed turbine dimension range on the issue of Appropriate Assessment. It states that there will be no change to the footprint of the proposed development irrespective of which turbine is selected and therefore no change to the conclusions of the NIS with respect to terrestrial and freshwater habitats and species. The only potential exception is stated to be the collision risk to birds, however it is stated that the difference between the predicted increases in mortality rate in the NIS and those in the updated Collision Risk Model are negligible and the conclusion of the Screening and NIS remain unchanged.

10.3.7. Having reviewed the NIS and the supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, clearly identifies the potential effects, and uses best scientific information and knowledge. Details of mitigation measures are provided and they are summarised in Section 7.8 of the

NIS. I am satisfied that the information is sufficient to allow for appropriate assessment of the proposed development.

10.4. Screening the Need for Appropriate Assessment

10.4.1. The proposed development is not directly connected to or necessary to the management of any European Site and therefore is subject to the provisions of Article 6(3).

10.4.2. The screening considers European Sites within 15km of the proposed development. Having regard to the nature of the proposed development, the nature of the receiving environment and the source-pathway-receptor model, I consider this to be a reasonable zone of influence. There are 4 No. European Sites within this radius (all Special Areas of Conservation). A further 5 No. European sites (all Special Protection Areas) that are located outside the 15km radius are also considered in the screening, due to potential links to the overall project (e.g. due to hydrological connections or sites designated for migratory birds).

10.4.3. Table 10.1 below lists the qualifying interests of the 9 No. European Sites, their conservation objectives and identifies possible connections between the proposed development (source) and the sites (receptors).

10.4.4. Having regard to: the information and submissions available; the nature, size and location of the proposed development; its likely direct, indirect and cumulative effects; the source-pathway-receptor model; and the sensitivities of the ecological receptors, I consider that the 9 No. identified sites are relevant to include for the purposes of initial screening for the requirement for Stage 2 appropriate assessment on the basis of likely significant effects.

Table 10.1: Table of European Sites Within a Possible Zone of Influence of the Proposed Development					
European Site (Code)	**Distance (to closest turbine)**	**Qualifying Interest(s)**	**Conservation Objectives**	**Connections (Source-Pathway-Receptor)**	**Considered further in screening**
Blackstairs Mountains SAC (000770)	0.4km (1.9km to grid connection and adjacent TDR turbine turning area)	Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030]	To maintain the favourable conservation condition of the Annex I habitats for which the SAC has been selected, as defined by a list of specific attributes and targets.	Yes No hydrological/ hydrogeological links to main wind farm or grid connection infrastructure. TDR turning area at POI52 is adjacent to the SAC with potential for remote hydrological link via existing forestry drains to the south.	**Yes** Hydrological connection to SAC from grid connection works could give rise to water quality impacts during construction phase or the spread of invasive species. The issue of the potential European Dry Heath habitat present within the appeal site (i.e. not within the SAC) is addressed separately in the EIA section above.

Slaney River Valley SAC (000781)	2.3km (3.7km to grid connection and adjacent TDR)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096]	To restore/ maintain the favourable conservation condition of the Annex I habitats / Annex II species for which the SAC has been selected, as defined by a list of specific attributes and targets.	<u>Yes</u> Indirect upstream hydrological links with proposed development (c.2.3km upstream distance)	**<u>Yes</u>** Hydrological connection to SAC could give rise to changes in water quality during construction phase. Construction works could impact on qualifying habitats or species through sedimentation, contamination, disturbance or via the spread of invasive species.

		Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaite Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]			
River Barrow and River Nore SAC (002162)	6.5km (7.8km to grid connection and 6.6km to TDR)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (Cratoneurion) [7220]	To restore / maintain the favourable conservation condition of the Annex I habitats / Annex II species for which the SAC has been selected, as defined by a list of specific attributes and targets.	Yes Indirect upstream hydrological links with proposed development	**Yes** Hydrological connection to SAC could give rise to changes in water quality during construction phase. Construction works could impact on qualifying habitats or species through sedimentation, contamination, disturbance or the spread of invasive species.

		Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaite Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Trichomanes speciosum (Killarney Fern) [1421] Margaritifera durrovensis (Nore Pearl Mussel) [1990]			
Screen Hills SAC (000708)	>15km	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	To maintain the favourable conservation	No	**No**

	(>15km to grid connection and 14.5km to TDR)	European dry heaths [4030]	condition of the Annex I habitats for which the SAC has been selected, as defined by a list of specific attributes and targets.	No connection.	Due to lack of pathway.
Wexford Harbour and Slobs SPA (004076)	22.3km	Little Grebe (Tachybaptus ruficollis) [A004] Great Crested Grebe (Podiceps cristatus) [A005] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Bewick's Swan (Cygnus columbianus bewickii) [A037] Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos) [A053] Pintail (Anas acuta) [A054] Scaup (Aythya marila) [A062] Goldeneye (Bucephala clangula) [A067]	To restore / maintain the favourable conservation condition of the bird species and the wetland habitat for which the SPA has been selected, as defined by a list of specific attributes and targets.	Yes Black-headed Gull, Cormorant, Lesser Black-backed Gull, Mallard, Hen Harrier, Curlew and Golden Plover recorded in bird survey results. Downstream connectivity with proposed development (c.34km in-stream distance)	**No** Hen harrier have a core range of 2km and max. range of 10km; Golden Plover have a core range of 3km and a max. range of 11km; single observation of Curlew, Black-headed Gull, Cormorant and Mallard;. Given the low collision risk (refer to collision risk modelling), the distance from the site, including the

		Red-breasted Merganser (Mergus serrator) [A069] Hen Harrier (Circus cyaneus) [A082] Coot (Fulica atra) [A125] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Black-headed Gull (Chroicocephalus ridibundus) [A179] Lesser Black-backed Gull (Larus fuscus) [A183] Little Tern (Sterna albifrons) [A195]			hydrological distance, and the results of bird surveys indicating that the site is of low value for these species, the potential for significant effects have been excluded.

		Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]			
Cahore Marshes SPA (004143)	37km	Wigeon (Anas penelope) [A050] Golden Plover (Pluvialis apricaria) [A140] Lapwing (Vanellus vanellus) [A142] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. To maintain or restore the favourable conservation condition of the wetland habitat as a resource for the regularly-occurring migratory waterbirds that utilise it.	Golden Plover recorded in bird survey results.	**No** Golden Plover have a core range of 3km and a max. range of 11km. Excluded given the low number of observations, the core range of the species and the distance from the appeal site.
Bannow Bay SPA (004033)	43.6km	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Pintail (Anas acuta) [A054] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140]	To restore / maintain the favourable conservation condition of the bird species and the wetland habitat for which the SPA has been selected, as defined by a list of	Curlew and Golden Plover recorded in bird survey results.	**No** Golden Plover have a core range of 3km and a max. range of 11km. Curlew have a core range of 1km and a

		Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143 Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Wetland and Waterbirds [A999]	specific attributes and targets.		max. range of 2km during the breeding season. Excluded given the low number of observations, the core range of the species and the distance from the appeal site.
Ballyteige Burrow SPA (004020)	48.9km	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Wetland and Waterbirds [A999]	To restore / maintain the favourable conservation condition of the bird species and the wetland habitat for which the SPA has been selected, as defined by a list of specific attributes and targets.	Golden Plover recorded in bird survey results.	**No** Golden Plover have a core range of 3km and a max. range of 11km. Excluded given the low number of observations, the core range of the species and the distance from the appeal site.

Tacumshin Lake SPA (004092)[13]	52.9km	Little Grebe (Tachybaptus ruficollis) [A004] Bewick's Swan (Cygnus columbianus bewickii) [A037] Whooper Swan (Cygnus cygnus) [A038] Wigeon (Anas penelope) [A050] Gadwall (Anas strepera) [A051] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Tufted Duck (Aythya fuligula) [A061] Coot (Fulica atra) [A125] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Wetland and Waterbirds [A999]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. To maintain or restore the favourable conservation condition of the wetland habitat as a resource for the regularly-occurring migratory waterbirds that utilise it.	Golden Plover recorded in bird survey results.	**No** Golden Plover have a core range of 3km and a max. range of 11km. Excluded given the low number of observations, the core range of the species and the distance from the appeal site.

[13] I note that the NIS does not list the correct qualifying interests for this site, and instead appears to duplicate the QIs for Ballyteige Burrow SPA.

10.4.5. Based on my examination of the NIS and supporting information, the NPWS website, aerial and satellite imagery, the scale of the proposed development and likely effects, separation distance and functional relationship between the proposed works and the European Sites, their conservation objectives and taken in conjunction with my assessment of the subject site and the surrounding area, I conclude that a Stage 2 Appropriate Assessment is required for 3 No. European Sites, namely the Blackstairs Mountains SAC, River Barrow and River Nore SAC and the Slaney River Valley SAC.

10.4.6. The remaining sites (Screen Hills SAC, Wexford Harbour and Slobs SPA, Cahore Marshes SPA, Bannow Bay SPA, Ballyteige Burrow SPA and Tacumshin Lake SPA) can be screened out from further assessment because of the characteristics of the appeal site, the scale of the proposed development, the nature of the Conservation Objectives and Qualifying Interests, the separation distances, the results of ornithological surveys and in particular the lack of a substantive linkage between the proposed development and the European site.

10.4.7. As noted above, the AA Screening Report and NIS also considers the effects of forestry replanting in Counties Limerick and Sligo on European sites. This replanting does not form part of the proposed development before the Board and will only be considered in the context of any potential in-combination effects with the proposed development (i.e. the wind farm development).

10.4.8. The appeal submitted on behalf of Sarah Durdin Robertson by Peter Sweetman contends that the applicant has used the wrong test in their Appropriate Assessment Screening Report. Mr Sweetman states that the correct test is to be found in Kelly v An Bord Pleanála [2014] IEHC 400 at paragraph 26, which approvingly quotes Advocate General Sharpston in paragraphs 47-49 of her Opinion in CJEU Case C-258/11.

10.4.9. He states that, as the screening is fundamentally flawed, it is not possible to make a finding which would comply with paragraph 44 from CJEU 248/11.

> "So far as concerns the assessment carried out under Article 6(3) of the Habitats Directive, it should be pointed out that it cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the

works proposed on the protected site concerned (see, to this effect, Case C-404/09 Commission v Spain, paragraph 100 and the case-law cited). It is for the national court to establish whether the assessment of the implications for the site meets these requirements."

10.4.10. In response, the applicant notes that case C-258/11 and paragraphs 47-49 of Advocate General Sharpston's opinion were refenced on page 5 of the AA Screening Report and NIS and contends that the European sites screened out were correctly screened out on the basis of objective information that the proposed development individually or in-combination with other plans or projects will have no, or no appreciable, effects on those sites.

10.4.11. The appeal is unclear as to why the appellant considers the screening to be fundamentally flawed. As outlined above, I consider that the applicant's AA Screening Report has correctly identified the sites where there is the possibility of significant effects and, conversely, has correctly identified the sites where the possibility of significant effects can be excluded on the basis of objective information. I do not consider that there are any lacunae with regard to the sites that have been screened out for appropriate assessment. I conclude that the approach taken in the AA Screening Report, and its conclusions, are consistent with the statements made by AG Sharpston in Case C-58/11.

10.4.12. BirdWatch Ireland, in their observation, state that it is unacceptable that the Annex I species Merlin and Peregrine Falcon have been screened out for Appropriate Assessment. However, as noted in the NIS, these species were infrequently observed at the site and there are no SPAs designated for these bird species within 50km of the appeal site. In my opinion, it was reasonable, therefore, for the applicant to exclude the potential for significant effects for these QI species.

10.4.13. <u>Screening Determination</u>

10.4.14. Following the screening process, it has been determined that Appropriate Assessment is required as it cannot be excluded on the basis of objective information that the proposed development individually or in-combination with other plans or projects will have a significant effect on the following European site (i.e. there is the possibility of significant effect):

- River Barrow and River Nore SAC (Site Code 002162)

- Slaney River Valley SAC (Site Code 000781)
- Blackstairs Mountains SAC (Site Code 000770)

10.4.15. The possibility of significant effects on other European sites has been excluded on the basis of objective information. The following European sites have been screened out for the need for appropriate assessment:

- Screen Hills SAC (Site Code 000708)
- Wexford Harbour and Slobs SPA (Site Code 004076)
- Cahore Marshes SPA (Site Code 004143)
- Bannow Bay SPA (Site Code 004033)
- Ballyteige Burrow SPA (Site Code 004020)
- Tacumshin Lake SPA (Site Code 004092)

10.4.16. Measures intended to reduce or avoid significant effects have not been considered in the screening process.

10.5. Appropriate Assessment of Implications of the Proposed Development

10.5.1. The following is a summary of the objective scientific assessment of the implications of the proposed development on the qualifying interest features of the abovementioned European site using the best scientific knowledge in the field. All aspects of the proposed development which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are considered and assessed.

10.5.2. The following sites are subject to Appropriate Assessment:

- River Barrow and River Nore SAC (Site Code 002162)
- Slaney River Valley SAC (Site Code 000781)
- Blackstairs Mountains SAC (Site Code 000770)

10.5.3. A description of the sites, their Conservation Objectives and Qualifying Interests/Special Conservation Interests, including any relevant attributes and targets for the site, are set out in the NIS and summarised in Tables 10.2 - 10.4 of this report as part of my assessment. I have also examined the Natura 2000 data forms as

relevant and the Conservation Objectives supporting documents for the site available through the NPWS website (www.npws.ie).

10.5.4. Aspects of the Proposed Development

10.5.5. In my opinion, having reviewed the development proposals and the characteristics of the European Sites, the main aspects of the proposed development that could adversely affect the conservation objectives of the abovementioned European Sites primarily arise during the construction phase and include:

- Impacts to water quality through construction related pollution events (e.g. chemicals, oil/fuel, cementitious materials etc.) or sediments/silt run-off.
- Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.
- Habitat loss, fragmentation or alteration.
- Introduction of invasive species or biosecurity issues during construction.

10.5.6. With regard to the operational phase, considering the nature of the proposed development, the qualifying interests and conservation objectives of the abovementioned European Sites, and the separation distances, I consider that the proposed development – once operational – is not likely to adversely affect the integrity of the European Sites in light of their conservation objectives. There is, however, low potential for hydrocarbon, oil or other pollutant run-off to result in a deterioration in water quality in the Slaney River Valley SAC.

10.5.7. Tables 10.2 - 10.4 below summarise the Appropriate Assessment and site integrity test. The conservation objectives for the European Sites have been examined and assessed with regard to the identified potential significant effects and all aspects of the project (alone and in combination with other plans and projects). Mitigation measures proposed to avoid and reduce impacts to a non-significant level have been assessed, and clear, precise and definitive conclusions reached in terms of adverse effects on the integrity of the European sites.

10.5.8. In-Combination Effects

10.5.9. As noted above, the NIS assesses the entire project, not just the proposed wind farm that forms the basis of this appeal. The NIS therefore assesses the potential in-combination effects of the associated grid connection works and turbine delivery works.

10.5.10. With regard to other projects, the NIS examines a range of projects for potential in-combination effects and was informed by a planning search within a 2km buffer zone around the main wind farm site for all planning applications granted in the last five years or current at the time of lodgement. A planning search for major projects (i.e. wind farms) within 20 km of the site and review of Irish Wind Energy Association data was also undertaken.

10.5.11. ***Wind Farms***

10.5.12. There are 13 No. operational and 1 No. permitted wind farm within 20km of the site (see Table 16 of NIS for locations).

10.5.13. As construction is the most high-risk phase of the development compared to operational and decommissioning phases and as the abovementioned wind farms are already operational (other than 1 No. turbine at Monaughrim, 7.87km north east), in-combination effects on shared watercourses are not likely to occur. This is also the case for habitats, flora and less mobile species of fauna.

10.5.14. With regard to the permitted Monaughrim turbine, this drains into the same catchment as the main wind farm site (Slaney and Wexford Harbour catchment) and separate sub catchment (Slaney_SC_060). Noting the distance between the two developments and the single turbine nature of the Monaughrim development, a significant cumulative effect to water quality is unlikely to occur should the construction phases of the developments overlap.

10.5.15. Ecological studies for the nearby wind farms indicate that there is no potential for in-combination effects on QI species of Wexford Harbour and Slobs SPA, Cahore Marshes SPA, Bannow Bay SPA, Ballyteige Burrow SPA and/or Tacumshin Lake SPA due to the low numbers of QI species occurring in the study area of the proposed project, the infrequent nature of sightings, and the associated habitats of the QI species not being present within the main wind farm site. The lack of breeding, winter roosting and regular foraging as well as the relative distance to

these sites in comparison to the core foraging range for these species also rules out potential in-combination effects.

10.5.16. The potential for significant in-combination effects is therefore excluded.

10.5.17. ***Other Renewable Energy Developments***

10.5.18. A number of solar energy projects have been identified within 10km. Given the potential for water quality impacts during construction, and potential impacts associated with the various grid connection works required, the potential for significant in-combination effects cannot be ruled out.

10.5.19. A 100MW battery storage facility is permitted adjacent to Kellistown Substation. If the construction works of the two projects were to overlap, due to buffers and the distance between the site and the nearest watercourse no sediment input will occur and there will be no effect to water quality. Potential for significant in-combination effects has therefore been excluded.

10.5.20. ***Land Use***

10.5.21. Construction of the proposed development poses a potential risk to watercourses in terms of alteration of drainage regimes, silt run-off and pollution events giving rise to the potential for effects to fish, aquatic habitats and aquatic invertebrates. Further enrichment from other existing land use patterns could give rise to the potential for in-combination indirect effects on the aquatic environment, including the downstream designated sites.

10.5.22. ***Quarries***

10.5.23. An active quarry and associated processing and storage areas are present along the Slaney at Kildavin upstream of Bunclody. There is potential for indirect in-combination effects to the SAC to occur in the absence of mitigation.

10.5.24. ***Recreational Activities***

10.5.25. The potential for significant in-combination effects with leisure angling and the construction of a permitted all-weather sports pitch 0.8km from the proposed grid route has been excluded.

10.5.26. ***Industrial Activities***

10.5.27. There are a number of meat processing plants within the study area, however EPA reports indicate that their wastewater discharge complies with their licenced ELVs. The potential for significant in-combination effects has been excluded.

10.5.28. A precast concrete plant located along the proposed grid connection route is not licensed for industrial emissions and no hydrological pathways were identified. As such this activity does not have potential to result in in-combination effects.

10.5.29. Other industrial activities within the study area include an animal feed factory adjacent to the Slaney (licence surrendered due to licensable activity falling below licensing capacity thresholds), a fish farm adjacent to the Burren River downstream of proposed amenity trail (discharge licence) and a composting facility (with Industrial Emissions Licence). Due to the nature of these activities and/or licensing controls, the potential for significant in-combination effects has been excluded.

10.5.30. ***Residential/Commercial Development***

10.5.31. An application for a 30-room accommodation complex in Carrickduff, Bunclody Co. Carlow, adjacent to the Slaney River Valley SAC, has been submitted and includes a stage 2 NIS. Due to the mitigation measures specified in the accompanying NIS, no cumulative effects are likely to occur.

10.5.32. There are no large residential developments in close proximity to the proposed development. Various residential developments have been permitted in the wider area and it is considered that there is potential for cumulative effects to occur in combination with the construction stages of housing developments where mitigation measures have not been specified.

10.5.33. ***Forestry and Farming***

10.5.34. While there will be no commercial forestry felling within the main wind farm site during the construction period, commercial activities will continue outside of the site, and in-combination effects are considered likely due to the increased release of sediments and nutrients to receiving watercourses with the potential to impact on the Slaney River Valley SAC and River Barrow and River Nore SAC.

10.5.35. The potential for in-combination effects due to the proposed development and farming activities contributing to an increase in nutrient levels, sedimentation or pollution of local watercourses is also identified.

Tables 10.2 – 10.4: Summary of Appropriate Assessment of implications of the proposed development on the integrity of identified European Sites alone and in combination with other plans and projects in view of the sites' Conservation Objectives.

Table 10.2: Blackstairs Mountains SAC (000770)					
Summary of Key issues that could give rise to adverse effects: • **Habitat loss, fragmentation or alteration.** • **Introduction of invasive species or biosecurity issues during construction.** **Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000770.pdf**					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Northern Atlantic wet heaths with Erica tetralix [4010]	**Maintain favourable conservation condition**.	No direct hydrological link to the mapped areas for this habitat. No hydrogeological effects from works at POI52 due to the nature of works and its location upslope in existing drained land for forestry.	None	No mitigation required.	**Yes**
European dry heaths [4030]	**Maintain favourable conservation condition**.	No hydrological/ hydrogeological effects (such as the drying out of peat) are possible due to the separation of the SAC from wind farm infrastructure by an existing physical barrier (ridge) and noting the shallow peat depths and soil types onsite. The turning area at POI 52 along the TDR is adjacent to the SAC. In the event of a release of suspended sediment, polluted runoff and/or spread of non-native invasive species from the construction of the car park extension	None	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

		there could be significant indirect effects to the SAC via existing forestry drainage onsite which drains to the south and east. Changes in water quality could indirectly affect the QI habitats for which the SAC is designated. This could result in: decline in habitat area and distribution; decline in community diversity, positive indicator species and rare, threatened or scarce species associated with the habitat; and increase in negative indicator species, shrub, trees, bracken, soft rush and non-native invasive species.		Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	
Overall conclusion: Integrity test Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development will not adversely affect the integrity of the Blackstairs Mountains SAC in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					

Table 10.3: Slaney River Valley SAC (000781)					
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.** • **Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.** • **Habitat loss, fragmentation or alteration.** • **Introduction of invasive species or biosecurity issues during construction.** • **In-combination effects with other projects.** **Conservation Objectives: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000781.pdf**					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Estuaries [1130]	**Maintain favourable conservation condition**. The permanent habitat area is stable or increasing, subject to natural processes; The following community types should be maintained in, or restored to, a natural condition: Mixed sediment community complex; Estuarine muds dominated by polychaetes and crustaceans community complex; and Sand dominated by polychaetes community complex	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI
Mudflats and sandflats not covered by seawater at low tide [1140]	**Maintain favourable conservation condition**. The permanent habitat area is stable or increasing, subject to natural processes; The following community types should	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI

	be maintained in a natural condition: Estuarine muds dominated by polychaetes and crustaceans community complex; and Sand dominated by polychaetes community complex				
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	Omitted from Conservation Objectives document	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI
Mediterranean salt meadows (Juncetalia maritimi) [1410]	Omitted from Conservation Objectives document	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	**Maintain favourable conservation condition**. No decline in habitat distribution, subject to natural processes; Habitat area stable at 12.6km or increasing, subject to natural Processes; Maintain appropriate hydrological regimes; Maintain natural tidal regime; For the tidal sub-type, the substratum of the channel must be dominated by particles of sand to gravel, with silt at the river margins; The concentration of nutrients in the water column must be sufficiently low to prevent changes in species composition or habitat condition; Typical species of the relevant habitat sub-type reach favourable status; The area of active	Yes Siltation/pollution could result in a reduction in distribution and area of this habitat, in an increase in fine sediments and suspended solids, in alterations to mineral concentrations, and in an increase in nutrient concentration. Introduction of invasive species/biohazards could result in a potential reduction in distribution and area of this habitat and in a reduction of habitat sub-types.	Yes Potential for proposed development to contribute to an in-combination effect on the distribution and area of this habitat, in cumulative increases in fine sediments and suspended solids, in cumulative alterations to mineral concentrations, in a cumulative	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	floodplain at and upstream of the habitat must be maintained.		increase in nutrient concentration or a cumulative reduction of habitat sub-types.	to monitor compliance with mitigation measures and conditions.	
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	**Restore favourable conservation condition**. Habitat area stable or increasing, subject to natural processes; No decline in habitat distribution; Woodland size stable or increasing; Diverse woodland structure with a relatively closed canopy containing mature trees; subcanopy layer with semi-mature trees and shrubs; and well-developed herb layer; Maintain diversity and extent of woodland community types; Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy; At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter; No decline in veteran trees; No decline in indicators of local distinctiveness; No decline in native tree cover of not less than 95%; Variety of typical native species present, depending on woodland type; Negative indicator species, particularly non-native invasive species, absent or under control	No Habitat is not present in vicinity of proposed development. No potential for indirect effects due to nature of proposed development and terrestrial nature of habitat.	None	No mitigation required.	**Yes** No potential for adverse direct or indirect effects
Alluvial forests with Alnus	**Restore favourable conservation condition**	No	None	No mitigation required.	**Yes**

glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	Habitat area stable or increasing, subject to natural processes; No decline in habitat distribution; Woodland area stable or increasing; Diverse Woodland structure with a relatively closed canopy containing mature trees, subcanopy layer with semi-mature trees and shrubs and well-developed herb layer; Maintain diversity and extent of woodland community types; Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy; Hydrological regime necessary for maintenance of alluvial vegetation; At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; No decline in veteran trees; No decline in indicators of local woodland distinctiveness; No decline in native tree cover of not less than 95%; A variety of typical native species present, depending on woodland type; Negative indicator species, particularly non-native invasive species, absent or under control	Habitat is not present in vicinity of proposed development. No potential for indirect effects due to nature of proposed development and terrestrial nature of habitat.			No potential for adverse direct or indirect effects
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	Status of freshwater pearl mussel as a qualifying Annex II species for the SAC is currently under review. No site-specific conservation objective currently.	No Aquatic ecology survey found no evidence of freshwater pearl mussel was in the study area. No significant populations present within the potential	None	No mitigation required.	**Yes** Species not within ZoI

		downstream zone of influence.			
Petromyzon marinus (Sea Lamprey) [1095]	**Restore favourable conservation condition.** Greater than 75% of main stem length of rivers accessible from estuary; At least three age/size groups present; Juvenile density at least 1/m²; No decline in extent and distribution of spawning beds; More than 50% of sample sites positive for juvenile habitat.	Yes Lamprey spp. are present in the Douglas River, Clashavey river, Kildavin stream, tributaries of the SAC. Siltation or pollution could result in a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on population structure of juveniles, on spawning beds and on juvenile habitat.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Lampetra planeri (Brook Lamprey) [1096]	**Restore favourable conservation condition.** Access to all watercourses down to first order streams; At least three age/size groups of brook/river lamprey present; Mean catchment juvenile density of brook/river lamprey at least 2/m²; No decline in extent and distribution of	Yes Lamprey spp. are present in the Douglas River, Clashavey river, Kildavin stream, tributaries of the SAC. Siltation or pollution could result in a potential negative	Yes Potential for proposed development to contribute to an in-combination effect on population structure of juveniles, on	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	spawning beds; More than 50% of sample sites positive for juvenile habitat.	effect on population structure of juveniles, on spawning beds and on juvenile habitat. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	spawning beds and on juvenile habitat.	impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	
Lampetra fluviatilis (River Lamprey) [1099]	**Restore favourable conservation condition.** Greater than 75% of main stem and major tributaries down to second order accessible from estuary; At least three age/size groups of river/brook lamprey present; Mean catchment juvenile density of brook/river lamprey at least 2/m²; No decline in extent and distribution of spawning beds; More than 50% of sample sites positive for juvenile habitat.	Yes Lamprey spp. are present in the Douglas River, Clashavey river, Kildavin stream, tributaries of the SAC. Siltation or pollution could result in a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on population structure of juveniles, on spawning beds and on juvenile habitat.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

				measures and conditions.	
Alosa fallax fallax (Twaite Shad) [1103]	**<u>Restore</u> favourable conservation condition.** Greater than 75% of main stem length of rivers accessible from estuary; More than one age class present; No decline in extent and distribution of spawning habitats; Water oxygen levels no lower than 5mg/l; Maintain stable gravel substrate with very little fine material, free of filamentous algal growth and macrophyte growth	<u>Yes</u> Siltation or pollution could result in a potential negative effect on population structure, on spawning gravels, on water quality and oxygen levels. Introduction of invasive species/biohazards could have a potential negative effect on population structure, on spawning beds and on water quality and oxygen levels.	<u>Yes</u> Potential for proposed development to contribute to an in-combination effect on population structure, on spawning habitats and on water quality and oxygen levels.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Salmo salar (Salmon) [1106]	**<u>Restore</u> favourable conservation condition.** 100% of river channels down to second order accessible from estuary; Conservation Limit for each system consistently exceeded; Maintain or exceed 0+ fry mean catchment-wide abundance threshold value - currently set at 17 salmon fry/5 min sampling; No	<u>Yes</u> Siltation or pollution could result in a potential negative effect on spawning habitats, on salmon fry abundance, on smolt abundance, on the number and distribution of redds, on water quality resulting in reduced	<u>Yes</u> Potential for proposed development to contribute to an in-combination effect on spawning habitat availability, on abundance of	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	significant decline in out-migrating smolt abundance; No decline in no. and distribution of spawning redds due to anthropogenic causes; Water quality at least Q4 at all sampled sites.	numbers of different age classes, reduced breeding success and fish kills.	salmon fry, smolt and redds, and on water quality	impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	
Lutra lutra (Otter) [1355]	**<u>Restore</u> favourable conservation condition.** No significant decline in distribution; No significant decline in terrestrial habitat (64.7ha above high water mark; 453.4ha along river banks / around ponds); No significant decline in marine habitat (534.7ha); No significant decline in river habitat (Length 264.1km); No significant decline in lake habitat (0.4ha); No significant decline in couching sites and holts; No significant decline in fish biomass; No significant increase in barriers to connectivity.	<u>Yes</u> Otter signs recorded during aquatic surveys. No holts recorded in the main wind farm or within 150m up or downstream of the proposed stream crossings or other parts of the project in close proximity to watercourses. Potential effects in the event of night time works resulting in potential disturbance. Siltation or pollution could result in deterioration of water quality, reducing fish biomass available.	<u>Yes</u> Potential for contributing to cumulative increase in works taking place during night hours. Potential for contributing to a cumulative reduction in fish numbers.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality and consequently fish biomass. Construction during daylight hours only, other than limited concrete pours, turbine erection etc. Ecological Clerk of Works to be appointed to monitor compliance	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

				with mitigation measures and conditions.	
Phoca vitulina (Harbour Seal) [1365]	**Maintain favourable conservation condition**. Species range within the site should not be restricted by artificial barriers to site use; The breeding sites should be maintained in a natural condition; The moult haul-out sites should be maintained in a natural condition; The resting haul-out sites should be maintained in a natural condition; Human activities should occur at levels that do not adversely affect the harbour seal population at the site.	No No potential for adverse effects on this species.	None	No mitigation required	**Yes**
Overall conclusion: Integrity test Following the implementation of mitigation, the construction. operation and decommissioning of the proposed development will not adversely affect the integrity of the Slaney River Valley SAC in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					

Table 10.4: River Barrow and River Nore SAC (002162)					
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.** • **Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.** • **Habitat loss, fragmentation or alteration.** • **Introduction of invasive species or biosecurity issues during construction.** • **In-combination effects with other projects.** **Conservation Objectives:** https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002162.pdf					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	**Maintain favourable conservation condition**. No decline in occupied sites (see Map 7 of Conservation Objectives document for 2 No. known sites); At least 5 adult snails in at least 50% of samples; Adult snails present in at least 60% of samples per site; Minimum of 1ha of suitable habitat per site; 90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011); 90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011)	No Known sites of Desmoulin's whorl snail are not within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Species not within ZoI
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	Status of freshwater pearl mussel as a qualifying Annex II species for the SAC is currently under review. No site-specific conservation objective currently.	No Aquatic ecology survey found no evidence of freshwater pearl mussel in the study area.	None	No mitigation required.	**Yes** Species not within ZoI

		Known populations of freshwater pearl mussel are in 3 No. tributaries of the River Barrow in Co. Carlow, not the main channel, and are well outside of the likely Zone of Influence of proposed development.			
Austropotamobius pallipes (White-clawed Crayfish) [1092]	**Maintain favourable conservation condition.** No reduction in distribution from baseline; Juveniles and/or females with eggs in at least 50% of positive samples; No alien crayfish species; No instances of disease; Water quality at least Q3-4 at all sampled sites; No decline in heterogeneity or habitat quality.	Yes Not recorded during aquatic surveys but previously recorded in the Burren River. The current distribution and range of this species encompasses the wind farm and grid connection sites. Siltation or pollution could result in a potential negative effect on population density, juvenile density, on water quality and by contributing to siltation of river beds. Introduction of invasive species/biohazards such as crayfish plague could have a potential negative effect on population density, juvenile density, introduction of alien crayfish species outcompeting native species.	Yes Potential for proposed development to contribute to an in-combination effect on population density, juvenile density, deterioration in water quality or siltation of river beds..	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards such as crayfish plague. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

Petromyzon marinus (Sea Lamprey) [1095]	**Restore favourable conservation condition.** Greater than 75% of main stem length of rivers accessible from estuary; At least three age/size groups present; Juvenile density at least 1/m²; No decline in extent and distribution of spawning beds; More than 50% of sample sites positive for juvenile habitat.	Yes Lamprey spp. are present in the Burren River, a tributary of the SAC. Siltation or pollution could result in a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on population structure of juveniles, on spawning beds and on juvenile habitat.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Lampetra planeri (Brook Lamprey) [1096]	**Restore favourable conservation condition.** Access to all watercourses down to first order streams; At least three age/size groups of brook/river lamprey present; Mean catchment juvenile density of brook/river lamprey at least 2/m²; No decline in extent and distribution of spawning beds; More than 50% of sample sites positive for juvenile habitat.	Yes The current distribution and range of this species encompasses the wind farm and grid connection sites. Siltation or pollution could result in a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on population structure of juveniles, on spawning beds and on juvenile habitat.	See Section 10.5.36 below. Best practice pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

		Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.		introduction of invasive species/biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	
Lampetra fluviatilis (River Lamprey) [1099]	**Restore favourable conservation condition.** Greater than 75% of main stem and major tributaries down to second order accessible from estuary; At least three age/size groups of river/brook lamprey present; Mean catchment juvenile density of brook/river lamprey at least 2/m²; No decline in extent and distribution of spawning beds; More than 50% of sample sites positive for juvenile habitat.	Yes The current distribution and range of this species encompasses the wind farm and grid connection sites. Siltation or pollution could result in a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on population structure of juveniles, on spawning beds and on juvenile habitat.	See Section 10.5.36 below. Best practice pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Alosa fallax fallax (Twaite Shad) [1103]	**Restore favourable conservation condition.** Greater than 75% of main stem length of rivers accessible from estuary; More than one age class present; No decline in extent	Yes Siltation or pollution could result in a potential negative effect on population structure, on	Yes Potential for proposed development to contribute to an in-	See Section 10.5.36 below. Best practice drainage and pollution prevention methods	**Yes** No doubt as to the effectiveness or implementation of mitigation

	and distribution of spawning habitats; Water oxygen levels no lower than 5mg/l; Maintain stable gravel substrate with very little fine material, free of filamentous algal growth and macrophyte growth	spawning gravels, on water quality and oxygen levels. Introduction of invasive species/biohazards could have a potential negative effect on population structure, on spawning beds and on water quality and oxygen levels.	combination effect on population structure, on spawning habitats and on water quality and oxygen levels.	are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species /biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	measures proposed to prevent direct or indirect effects on integrity.
Salmo salar (Salmon) [1106]	**Restore favourable conservation condition.** 100% of river channels down to second order accessible from estuary; Conservation Limit for each system consistently exceeded; Maintain or exceed 0+ fry mean catchment-wide abundance threshold value - currently set at 17 salmon fry/5 min sampling; No significant decline in out-migrating smolt abundance; No decline in no. and distribution of spawning redds due to anthropogenic causes; Water quality at least Q4 at all sampled sites.	Yes Siltation or pollution could result in a potential negative effect on spawning habitats, on salmon fry abundance, on smolt abundance, on the number and distribution of redds, on water quality resulting in reduced numbers of different age classes, reduced breeding success and fish kills.	Yes Potential for proposed development to contribute to an in-combination effect on spawning habitat availability, on abundance of salmon fry, smolt and redds, and on water quality.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species /biohazards. Ecological Clerk of Works to be appointed to monitor compliance	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

				with mitigation measures and conditions.	
Lutra lutra (Otter) [1355]	**Restore favourable conservation condition.** No significant decline in distribution; No significant decline in terrestrial habitat (122.8ha above high water mark; 1136.0ha along river banks / around ponds); No significant decline in marine habitat (857.7ha); No significant decline in river habitat (Length 616.6km); No significant decline in lake habitat (2.6ha); No significant decline in couching sites and holts; No significant decline in fish biomass.	Yes Otter signs recorded during aquatic surveys. No holts recorded in the main wind farm or within 150m up or downstream of the proposed stream crossings or other parts of the project in close proximity to watercourses. Potential effects in the event of night time works resulting in potential disturbance. Siltation or pollution could result in deterioration of water quality, reducing fish biomass available.	Yes Potential for contributing to cumulative increase in works taking place during night hours. Potential for contributing to a cumulative reduction in fish numbers.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality and consequently fish biomass. Construction during daylight hours only, other than limited concrete pours, turbine erection etc. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Margaritifera durrovensis (Nore Pearl Mussel) [1990]	**Restore favourable conservation condition.** Maintain distribution at 15.5km; Restore population to 5,000 adult Mussels; Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length;	No No potential for effects due to absence from Barrow system.	None	No mitigation required.	**Yes** Species not within ZoI

	Mortality no more than 5% decline from previous number of live adults counted and dead shells less than 1% of the adult population and scattered in distribution; Restore suitable habitat in length of river corresponding to distribution target (15.5km) and any additional stretches necessary for salmonid spawning; Restore water quality-macroinvertebrates: EQR greater than 0.90 and phytobenthos: EQR greater than 0.93; Restore substratum quality- filamentous algae: absent or trace (<5%), macrophytes: absent or trace (<5%); Restore substratum quality- stable cobble and gravel substrate with very little fine material and no artificially elevated levels of fine sediment; Restore redox potential to no more than 20% decline from water column to 5cm depth in substrate; Restore appropriate hydrological regimes; Maintain sufficient juvenile salmonids to host glochidial larvae				
Trichomanes speciosum (Killarney Fern) [1421]	**Maintain favourable conservation condition**. No decline in distribution; Maintain at least three colonies of gametophyte, and at least one sporophyte colony of over 35 fronds; At least one of the locations to have a population structure comprising sporophyte, unfurling fronds, 'juvenile' sporophyte and gametophyte generations; No loss of suitable habitat, such as shaded rock crevices, caves or gullies in or near to,	No Known locations of habitat are not in vicinity of proposed development. No potential for indirect effects due to nature of proposed development and potential effects arising.	None	No mitigation required.	**Yes** Habitat not within ZoI

	known colonies. No loss of woodland canopy at or near to known locations; Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats and water is visible at all locations; No increase in no. of dessicated fronds; No changes in shading due to anthropogenic impacts; Invasive species absent or under control				
Estuaries [1130]	**Maintain favourable conservation condition**. The permanent habitat area is stable or increasing, subject to natural processes; The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex; Fine sand with Fabulina fabula community; Maintain the natural extent of the Sabellaria alveolata reef, subject to natural process.	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI
Mudflats and sandflats not covered by seawater at low tide [1140]	**Maintain favourable conservation condition**. The permanent habitat area is stable or increasing, subject to natural processes; The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex.	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI
Reefs [1170]	Omitted from Conservation Objectives document.	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI

Salicornia and other annuals colonising mud and sand [1310]	**Maintain favourable conservation condition**. Area stable or increasing, subject to natural processes, including erosion and succession (0.03ha); No decline in occurrence, subject to natural processes; Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions; Maintain natural tidal regime; Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession; Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession; Maintain structural variation within sward; Maintain more than 90% of area outside creeks vegetated; Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).; No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur.	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	**Restore favourable conservation condition.** Area stable or increasing, subject to natural processes, including erosion and succession; No decline in habitat distribution, subject to natural processes; Maintain/restore natural circulation of	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI

	sediments and organic matter, without any physical obstructions; Maintain natural tidal regime; Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession; Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession; Maintain structural variation within sward; Maintain more than 90% of area outside creeks vegetated; Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009; No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur.				
Mediterranean salt meadows (Juncetalia maritimi) [1410]	**Restore favourable conservation condition.** Area stable or increasing, subject to natural processes, including erosion and succession; No decline in habitat distribution, subject to natural processes; Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions; Maintain natural tidal regime; Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession; Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and	No Coastal habitat, not located within likely Zone of Influence of proposed development.	None	No mitigation required.	**Yes** Habitat not within ZoI

	succession; Maintain structural variation within sward; Maintain more than 90% of area outside creeks vegetated; Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009; No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur.				
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	**Maintain favourable conservation condition**. No decline in occurrence, subject to natural processes; Area stable or increasing, subject to natural processes; Maintain appropriate hydrological regimes; The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation; The substratum should be dominated by large particles and free from fine sediments; The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits; The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments; The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition; Typical species of the relevant habitat sub-type should be present and in good condition; The area of active	Yes Siltation/pollution could result in a reduction in distribution and area of this habitat, in an increase in fine sediments and suspended solids, in alterations to mineral concentrations, and in an increase in nutrient concentration. Introduction of invasive species/biohazards could result in a potential reduction in distribution and area of this habitat and in a reduction of habitat sub-types.	Yes Potential for proposed development to contribute to an in-combination effect on the distribution and area of this habitat, in cumulative increases in fine sediments and suspended solids, in cumulative alterations to mineral concentrations, in a cumulative increase in nutrient concentration or a cumulative reduction of habitat sub-types.	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	floodplain at and upstream of the habitat should be maintained.				
European dry heaths [4030]	**<u>Maintain</u> favourable conservation condition**. No decline from current habitat distribution, subject to natural processes; Area stable or increasing, subject to natural processes; No significant change in soil nutrient status, subject to natural processe; No increase or decrease in area of natural rock outcrop; Cover of characteristic sub-shrub indicator species at least 25%: gorse (Ulex europaeus) and where rocky outcrops occur bilberry (Vaccinium myrtillus) and woodrush (Luzula sylvatica); Cover of senescent gorse less than 50%; Long shoots of bilberry with signs of browsing collectively less than 33%; Cover of scattered native trees and shrub less than 20%; Number of positive indicator species at least 2 (e.g. gorse and associated dry heath/acid grassland flora); Cover of positive indicator species at least 60% (including gorse, bilberry and associated acid grassland flora); Number of bryophyte or non-crustose lichen species present at least 2; Cover of bracken less than 10%; Cover of agricultural weed species (negative indicator species) less than 1%; Cover of non-native species less than 1%; No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (Orobanche	<u>Yes</u> Siltation/pollution could result in: a reduction in ling heather and therefore habitat area; habitat distribution; changes to pH and nutrient levels; reduction in community diversity, bryophyte species, positive indicator species; an increase in negative indicator species or bracken; and a decline in rare, threatened or scarce species. Introduction of invasive species could result in a reduction in habitat area and/or distribution; changes to pH and nutrient levels; reduction in community diversity, bryophyte species, positive indicator species; an increase in negative indicator species; and a decline in rare, threatened or scarce species.	No	See Section 10.5.36 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	**Yes** No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

	rapum-genistae) and the legally protected clustered clover (Trifolium glomeratum); Cover of disturbed bare ground less than 10% (but if peat soil less than 5%); No signs of burning within sensitive areas				
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	**Maintain favourable conservation condition**. No decline in occurrence, subject to natural processes; Area stable or increasing, subject to natural processes; Maintain appropriate hydrological regimes; 30-70% of sward is between 40 and 150cm in height; Broadleaf herb component of vegetation between 40 and 90%; At least 5 positive indicator species present; Negative indicator species, particularly non-native invasive species, absent or under control.	No Habitat is not present in vicinity of proposed development. No potential for indirect effects due to nature of proposed development and potential effects arising.	None	No mitigation required.	**Yes** Habitat not within ZoI
Petrifying springs with tufa formation (Cratoneurion) [7220]	**Maintain favourable conservation condition**. Area stable or increasing, subject to natural processes; No decline in occurrence; Maintain appropriate hydrological regimes; Maintain oligotrophic and calcareous conditions; Maintain occurrence of typical species.	No Habitat is not present in vicinity of proposed development. No potential for indirect effects due to nature of proposed development and potential effects arising.	None	No mitigation required.	**Yes** Habitat not within ZoI
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	**Restore favourable conservation condition**. Area stable or increasing, subject to natural processes (85.08ha); No decline in occurrence; Woodland area stable or increasing; Woodland to have diverse structure with a relatively closed canopy containing mature trees, subcanopy layer	No Habitat is not present in vicinity of proposed development. No potential for indirect effects due to distance, nature of proposed development and terrestrial nature of habitat.	None	No mitigation required.	**Yes** Habitat not within ZoI

	with semi-mature trees and shrubs and well-developed herb layer; Maintain diversity and extent of Woodland community types; Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy; Ensure at least 30m³/ha of fallen timber greater than 10cm dia., 30 snags/ha, both categories should include stems greater than 40cm dia.; No decline in veteran trees per hectare; No decline in occurrence of indicators of local distinctiveness; No decline in native tree cover (not less than 95%); A variety of typical native species present; Negative indicator species, particularly non-native invasive species, absent or under control.				
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	**Restore favourable conservation condition**. Area stable or increasing, subject to natural processes (181.54ha); No decline in occurrence; Woodland area stable or increasing; Woodland to have diverse structure with a relatively closed canopy containing mature trees, subcanopy layer with semi-mature trees and shrubs and well-developed herb layer; Maintain diversity and extent of Woodland community types; Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy; Appropriate hydrological regime necessary for maintenance of alluvial	No Habitat is not present in vicinity of proposed development. No potential for indirect effects due to distance, nature of proposed development and terrestrial nature of habitat.	None	No mitigation required.	**Yes** Habitat not within ZoI

	vegetation; Ensure at least 30m³/ha of fallen timber greater than 10cm dia., 30 snags/ha, both categories should include stems greater than 40cm dia. (greater than 20cm dia. in the case of alder); No decline in veteran trees per hectare; No decline in occurrence of indicators of local distinctiveness; No decline in native tree cover; A variety of typical native species present; Negative indicator species, particularly non-native, invasive species, absent or under control.				
Overall conclusion: Integrity test Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development will not adversely affect the integrity of the River Barrow and River Nore SAC in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					

10.5.36. Mitigation Measures

10.5.37. The proposed mitigation measures are set out in Section 7.8 of the NIS and include the following:

10.5.38. **Avoidance by design:**

- Hardstandings kept to the minimum necessary to minimise land take of habitats and flora.
- Site design and layout deliberately avoided direct impacts on designated sites.
- Cabling to be placed underground, significantly reducing collision risk to birds.
- Grid connection routes selected to minimise land take of potentially sensitive habitats by using a mixture of public roads and agricultural land.
- Buffers maintained between wind farm infrastructure and hydrological features such as rivers and streams. No new stream crossings shall be required within the main wind farm site and utilisation of existing crossings/pipe culverts.
- Use of Horizontal Directional Drilling (HDD) where the grid connection crosses watercourses and avoidance of in-stream works.

10.5.39. **Mitigation Measures:**

- Implementation of Construction and Environment Management Plan (CEMP).
- Appointment of a Project Ecologist/Ecological Clerk of Works (ECoW) and an Environmental Manager.
- Communication with IFI.
- Water monitoring.
- Invasive species: Eradication prior to construction in accordance with the invasive species management plan (ISMP).
- Silt management: Silt traps and silt fencing to slow water flow, increase residence time, and allow settling of silt in a controlled manner. Settlement ponds, as detailed in the Surface Water Management Plan.

- Wastewater from substation: Sealed and alarmed wastewater storage tank at on-site substation with wastewater collected by licenced waste collector only.
- Habitats/flora: No disturbance to habitats or flora outside the proposed project area with all works restricted to the immediate footprint of the development and kept separate from any key areas for biodiversity; machinery and equipment stored within the site compound; designated access points to be established within the site and all construction traffic will be restricted to these locations with access primarily via the existing L2026 Barker's Road; HGVs to approach the site via this road from the East; demarcation of exclusion zones.
- Lighting: Construction during daylight hours to minimise disturbances to active nocturnal species. Limited operations such as concrete pours, turbine erection etc. require night-time operating hours and BCT guidance note 08/18 will be implemented when determining appropriate lighting for these works.
- Turbine lighting: "White lights" will be avoided as these can attract night flying birds such as migrants, and insects, which in turn can attract bats. Turbines to be illuminated with medium intensity fixed red obstacle lights where required by the IAA, with baffles to ensure that the light is directed skywards and will not be discernible from the ground.
- Toolbox talks to minimise disturbance to key species during construction.
- Plant: Inspections each day prior to use; defective plant shall not be used until the defect is satisfactorily fixed; all major repair and maintenance operations will take place off site.
- Pollution incident control response: Training of personnel; Emergency Response Plan outlining the spillage response procedure and a contingency plan to contain silt; regular review of weather forecasts of heavy rainfall and updating of site contingency plan; records kept of daily visual inspections of drains, silt ponds, etc on site and weekly inspections of streams which receive flows from the main wind farm site.
- Surface water: 50m buffer zone maintained for all streams with the exception of existing road upgrades; design of site drainage to complement existing overland flow and existing onsite drainage; three-stage treatment train (swale

– settlement pond – diffuse outflow) to retain and treat the discharges from all hard surface areas; regular clearing of settlement ponds to reduce the risk of sediment runoff or pollutants reaching waterways within the catchment of the proposed project and avoid adverse effects on the surrounding water courses and SAC's.

- Tree felling: Felling license to be in place prior to works commencing on site; tree clearance methods to follow relevant guidance from DAFM and Forestry Service; trees will be felled away from aquatic zones and branches, logs or debris will not be allowed to accumulate within 20m of watercourses and removed as soon as possible; additional silt fencing erected along the banks of watercourses in areas where tree felling is proposed; where damage or serious rutting has started to occur, timber extraction will be suspended immediately and relocation of the extraction rack will be used to avoid timber extraction routes acting as conduits for surface water flows, thus avoiding adverse effects on the surrounding watercourses; felling will be undertaken in the spring to facilitate the sowing of native grass seeds post-harvest to aid sediment filtration and nutrient absorption; machine operations will not take place in the 48 hour period before, during or after heavy rainfall; removal of brash from felling areas within 20m of forestry drains to reduce nutrient seepage.
- Road construction: imported materials shall contain minimal fines and are to be such as not to be liable to become crushed by vehicular movement. Compacted Cl. 804 material will be placed on top to provide a suitable running surface
- Drainage: No interference with natural watercourses; drains around hard-standing areas will be shallow to minimise the disturbance to sub-soils; interceptor cut-off drains on the upslope side of the site access roads with diffuse discharge over land; use of grassed swales to drain the site and slow down flow velocities; proposed access track routes to follow existing tracks; site access roads laid out to reduce the longitudinal slope of roadside drains and to follow natural flow paths; check dams provided where required; roadside drains alongside existing tracks will be cleared of obstructions only

where strictly necessary (i.e. if flooding occurs) as vegetation and other obstructions provide sediment arrest and flow attenuation functions.

- Wheel wash facilities.
- Concrete: Timing of concrete pours to occur outside periods where heavy rainfall would be expected. regular review of weather forecasts; delivery truck chute washing only to a lined and fully sealed pit at designated washing stations at least 50m of the stream zone or any sensitive habitats.
- Hydrocarbon management: Storage in bunded storage tanks (bunds with 110% volume); careful handling to avoid spillages, immediate containment of spillages with any contaminated soil removed from the site and properly disposed of; waste oils/hydraulic fluids will be collected in leak-proof containers and removed from the site; spill control equipment will be kept within the refuelling areas and in each item of plant.
- Refuelling: will only be carried out at designated refuelling station locations and no refuelling will take place within 50m of the stream zone or any sensitive habitats. Vehicles will never be left unattended during refuelling and it will only be carried out by dedicated trained personnel.
- Spill control: Appropriate equipment, such as oil soakage pads, will be kept within the construction area and in each item of plant to deal with any accidental spillage. All staff will be trained in appropriate spill control measures.
- Welfare utilities: Portaloos and/or containerised toilets and welfare units will be used to provide toilet facilities for site personnel and waste will be removed from site via a licensed waste disposal contractor.
- Horizontal Directional Drilling: Environmental Engineer with a “stop work” authority will be engaged; fencing off of working area around the bridge/culvert crossings to avoid damage to bankside habitat; should increased levels of siltation be recorded within the watercourses, construction works to be halted until the source of the pressure can be found and remediated; removal of surplus material from the site to an appropriate facility and no stockpiling of excavated material; setback distance of at least 20m

from watercourses when storing temporary spoil; consultation with IFI prior to any works taking place near watercourses; timing of construction works outside periods where heavy rainfall would be expected; maintenance of silt traps; training of personnel in pollution incident control response; appropriate signage outlining spillage response procedure and a contingency plan to contain silt; regular review of weather forecasts for heavy rainfall; visual inspections along the bore line; silt fences; no refuelling within 50m of the stream zone/ sensitive habitats; use of a natural, inert and fully biodegradable drilling fluid.

- Drainage: Duct installation during dry periods; environmental supervision; standing water arising during excavations pumped into the site drainage system at a minimum setback 20m upstream of settlement pond; where space for drainage infrastructure or suitable treatment measures is not available (e.g. during grid cable installation) excess water from excavations will be removed by tanker for disposal at licensed facility; 225mm dia. cross-drains provided to prevent a risk of clogging to crossings conveying flows from existing drains across the access roads.
- Excavated material: re-used on-site for berms etc. with surplus material removed to an appropriately licensed facility. Setback distance of at least 50m from watercourses when storing temporary spoil. Spoil heaps will be compacted and covered to minimise sediment-laden runoff and no spoil stockpiles will be left on site after construction. Stockpiles of sand/stone and other materials will be covered with sheeting when not in use to prevent washout of fines.
- Borrow pit: exposed faces will be covered with a geotextile to minimise erosion and hydroseeded after all use of the borrow pit has ceased. Drainage flows from the borrow pit will be channelled to a dedicated stilling pond located away from the headwaters of the Clashavey with a diffuse overland discharge.
- Contaminated material: will be handled, removed and disposed of in accordance with statutory requirements. Such material will be left in-situ and covered, where possible, until such time as Waste Acceptance Criteria testing

is undertaken in-line with the acceptance criteria to a suitably licenced landfill or treatment facility.

- Traffic: will adhere to the traffic management plan.

10.5.40. I consider that the proposed mitigation measures outlined in the NIS generally comprise relatively standard good practice measures for large-scale construction projects and for construction works in the vicinity of watercourses. I consider that the proposed measures, as well as the detailed construction methodology and further management plans contained within the CEMP (refer to NIS Appendix 6) are suitably detailed to remove any lack of clarity regarding potential adverse effects and that they are capable of being successfully implemented. I note that it is also proposed to appoint both an Ecological Clerk of Works and an Environmental Manager to ensure that the mitigation measures and best practice measures are fully implemented.

10.5.41. With regard to the operational phase, the following mitigation measures are proposed:

- Quarterly inspections of the erosion and sediment control measures (i.e. drains, swales, outfalls to field drains) for the first year following construction and annually thereafter.
- Management of hydrocarbons as per the construction phase measures.
- Settlement ponds left in place to be further utilised during the decommissioning phase.
- Continued treatment of invasive species according to the ISMP for as long as they persist within the site.

10.5.42. Integrity test

10.5.43. Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the proposed development would not adversely affect the integrity of the Blackstairs Mountains SAC (Site Code 000770), the Slaney River Valley SAC (Site Code 000781) or the River Barrow and River Nore SAC (Site Code 002162) in view of the Conservation Objectives of those sites.

10.5.44. This conclusion has been based on a complete assessment of all implications of the project alone and in combination with plans and projects.

10.6. Appropriate Assessment Conclusion

10.6.1. The proposed development has been considered in light of the assessment requirements of Sections 177U and 177V of the Planning and Development Act 2000, as amended.

10.6.2. Having carried out screening for Appropriate Assessment of the project, it was concluded that it may have a significant effect on the Blackstairs Mountains SAC (Site Code 000770), the Slaney River Valley SAC (Site Code 000781), or the River Barrow and River Nore SAC (Site Code 002162). 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.

10.6.3. Following an Appropriate Assessment, it has been ascertained that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of European site Nos. 000770, 000781, 002162, or any other European site, in view of the sites' Conservation Objectives.

10.6.4. This conclusion is based on a full and detailed assessment of all aspects of the proposed development including proposed mitigation measures in relation to the Conservation Objectives of these European sites and an assessment of likely in-combination effects with other plans and projects. No reasonable scientific doubt remains as to the absence of adverse effects on the integrity of these European Sites.

11.0 **Recommendation**

11.1. I recommend that planning permission should be refused for the reason set out below.

12.0 **Reasons and Considerations**

1. Objective WE O1 of the Carlow County Development Plan 2022 - 2028 seeks to increase the penetration of wind energy generation in County Carlow at appropriate locations and scale and subject to compliance with proper planning and environmental considerations. Notwithstanding the general policy support for wind energy generation, Policy WE P4 of the Plan states that wind farm development will not normally be permissible in the Uplands Landscape Type identified in the Carlow County Landscape Character Assessment. The proposed development is located on lands located within the designated Blackstairs and Mount Leinster Uplands Landscape Character Area and is therefore within an area where wind farm development is not normally permissible. Accordingly, it is considered that the proposed development would materially contravene Policy WE P4 of the Carlow County Development Plan 2022 - 2028 and would, therefore, be contrary to the proper planning and sustainable development of the area.

Niall Haverty
Senior Planning Inspector

18th November 2022

Appendix A: List of Observers

1 John Jobson
2 Desmond Breen & Others
3 Leslie and Rosaleen Duke
4 William Townsend
5 Alan Cocker
6 Jimmy and Mai Doyle
7 Aaron Townsend
8 Sheila Kirwan
9 Emma Jane Champley and Johnathan Dickson
10 Tom Flanagan and Helen Robbins
11 Rathanna ICA
12 Sharleen Warren
13 Gillian Markey
14 Lisa Nolan
15 Maria Rothwell
16 Jason Dowty
17 Patricia Sharkey
18 Barry and Karen Curry
19 Ciara Donohue
20 Tom Donohue
21 John Fagan
22 Eileen O'Brien and John Kirwan
23 Caitriona and Thomas Kavanagh
24 Emily, Michael and Kathleen Hart
25 Rita Rothwell
26 James and Jenny Cowman
27 Annette Fagan
28 J.P O'Brien
29 Donal Kinsella
30 Alexandra Fitzherbert
31 Shay Kavanagh
32 Matthew Byrne
33 Shane Dolan and Melanie Foot
34 Sarah Ann and Wayne Austin
35 Gayle Porter
36 Julieann Nolan
37 Eric Dignan
38 Suzanne Kavanagh
39 Gabrielle and Andrew Nolan
40 Edel Fagan
41 Jenny Watkins and Janet Power
42 Damian and Elaine Howard
43 Mogue and Kathleen Hendrick
44 Jim Hendrick

45 Patrick and Suzie Kehoe
46 Bridget Kehoe
47 Colin and Liz Nolan
48 Daniel Athwell
49 Richie and Fiona Nolan
50 Joseph and Anne Jacob
51 Tom Butler
52 James K Rothwell
53 Jim Furlong and Ciara Dunne
54 Ciaran and Michelle Smithers
55 Jerry Watkins
56 Brenda Kirwan
57 James and Fiona Kehoe
58 Jim and Anne Hendrick
59 Ellen Downes
60 Mary McDonagh
61 Shane Roberts
62 Tomas Nolan
63 Mary Anne Kinsells
64 Stephen O'Leary
65 Rita McCrea
66 John & Hilary Kidd
67 Bridie Townsend
68 Alan & Emma Mullins
69 Myshall Muintir Na Tire Guild
70 Edel Murphy and Martin Comiskey
71 K Dobie
72 William Quinn and William Paton
73 Caitriona Ryan
74 Gretta Roberts
75 Mark Donohue
76 Lloyd Reynalds
77 Will Kennedy
78 Christine Somers
79 Rachael C Pilkington
80 Bobbie and Rebecca Smith
81 Ronnie and Betty Deacon
82 George Quirke
83 Grainne Larrissey
84 Cornelia McCarthy
85 Adrienne Wallace
86 Irene O'Brien
87 John McDonald
88 Save Mount Leinster Petition
89 Rory O'Connell
90 Bryan Leech

91 Natalie King
92 Carlow Tourism Board
93 Andy and Mary Nolan
94 Katharine Larkin
95 Philip Ryan
96 Lisa Larkin
97 John and Mary Beck
98 Timmins Family
99 BirdWatch Ireland
100 Lavinia Jobson
101 Rebecca O'Connor
102 Julie Kirwan and Bryan Crouch
103 Adrian Coleman
104 Kenneth Heeney
105 Derek Rothwell
106 Helena McAteer and Brian Mulvany
107 Seamus and Elizabeth Townsend
108 Gráinne Callinan
109 Martin Murphy
110 Brendan Walker
111 Borris Lacemakers
112 Eric & Catherine Osborne
113 Martin Shannon
114 Eamon & Rachel Kinsella
115 Eoghan O'Brien
116 Niall Toner
117 Robert Moore
118 Maureen O'Brien
119 Tom and Anne Geoghegan
120 Dwain and Tara Kavanagh
121 Elizabeth Bowes
122 Donnacha and Rosemarie Byrne
123 Charlie Murphy
124 Marian Larry and Meabh Redmond
125 Jennifer Murnane O'Connor
126 John Foley
127 Martin Fagan
128 Michael Monahan
129 James and Natalie O'Neill
130 Tom James
131 Johnny and Veronica Tobin
132 Mary Laheen
133 Mary Murphy and Enda Smyth
134 Michael Doran
135 Thomas Kinsella
136 Claire Murphy

137 Naomi Jobson Moore
138 Irish Wildlife Trust
139 Rosemary Rooney
140 Brendan O'Hanrahan
141 Jim and Aisling Kavanagh

Appendix B: List of Observers Who Made Further Submissions Following Receipt of Further Information

1 Maria Rothwell
2 Ellen Downes
3 Tomas Nolan
4 Bridie Townsend
5 Rita McCrea
6 John Jobson
7 Lavinia Jobson
8 Brian Mulvany and Helena McAteer
9 Jonathan Dickson and Emma Jane Champley
10 John Fagan
11 Edel Fagan
12 Martin Fagan
13 Elizabeth Bowes
14 Charlie Murphy
15 Derek Rothwell
16 Mary Murphy and Enda Smyth
17 Tom Flanagan and Helen Robbins
18 Borris Lacemakers
19 Mary Dunphy on behalf of Rathanna ICA
20 Annette Fagan
21 Brenda Kirwan
22 Barry and Karen Curry
23 Matthew Byrne
24 Shane Roberts
25 Rebecca O'Connor
26 Myshall Muintir na Tire
27 James Kehoe
28 Cornelia McCarthy
29 Matt Byrne
30 Philip Ryan
31 Sharleen Warren
32 Rachel Carson Pilkington
33 Stephen O'Leary
34 Niall Toner
35 Mary McDonagh
36 John Paul O'Brien
37 Rosemary Rooney
38 Mary Anne Kinsella
39 Irene O'Brien

40 Dwain and Tara Kavanagh
41 Eoghan O’Brien
42 Donnacha Byrne and Rosemarie Byrne
43 Donal Kinsella
44 Catriona Ryan
45 Colin and Liz Nolan
46 Catriona Ryan
47 Brendan Walker
48 Naomi Moore
49 Lloyd Reynolds
50 Natalie King
51 Edel Murphy and Martin Comiskey
52 Damien and Elaine Howard
53 Alan and Evelyn Cocker
54 Robert Moore
55 Philip Ryan
56 Mogue and Katie Hendrick
57 Rita Rothwell
58 Jason, Lorraine, Luke and Ben Dowty
59 Andrew and Gabrielle Nolan
60 Eileen O’Brien and John Kirwan
61 Michael, Kathleen and Emily Hart