An Bord Pleanála

Inspector's Report ABP 309156-21

Development:	Twelve wind turbines, substation, grid connection and ancillary site works.
Location:	Townlands of Ballyline West, Coolkeragh, Dromalivaun and Tullamore. Co Kerry.
Planning Authority:	Kerry Co. Council.
Applicant:	Shronowen Wind Farm Ltd.
Type of Application:	Strategic Infrastructure (Section 37E).
Prescribed Bodies:	DAU Inland Fisheries Ireland Irish Water Transport Infrastructure Ireland Shannon Airport Authority Irish Aviation Authority
Observer(s):	Anthony & Peggy O' Connor Catherine Keane & Charles Mc Carthy John & Dympna O'Carroll John O' Sullivan Julie & Paul O' Donoghue Martin Walsh

	John Timothy & Niamh O'Sullivan John Martin & Bernadette O' Sullivan
Date of Site Inspection	June 8th & 9th, 2021 July 7th & 8th, 2021
Inspector	Breda Gannon.

Contents

1.0 Introduction

1.1. This is an application made by Shronowen Wind Farm Limited for strategic infrastructure under section 37E of the Planning and Development Act 2000, as amended. The application is made pursuant to formal notice issued by the Board dated 25th November, 2019, where it determined under section 37B(4)(a) of the Planning and Development Act as amended, that the proposed development falls within the scope of paragraphs 37A(2)(a) and (b) requiring that the application be made directly to the Board.

2.0 Site Location and Description

2.1. The proposed development is on a site extending across the townlands of Tullamore, Coolkeragh, Ballyline West and Dromalivaun. Co Kerry. It lies to the east of the R552, c.4km south of Ballylongford and 6km north of Listowel. It is accessed via the L6021 local road from the northeast (Tarbert) and via the L1009 from the west. The site lies in an area of open low peatland and consists primarily of cutover bog with large sections currently used for turf cutting, particularly to the west of the site. A small section of the site has been planted over with coniferous forestry at the north western edge.

2.2. The site is essentially flat and is intersected by a network of bog roads, that provide access for landowners, turbary rights and the public. An extensive network of drains transects the site which outfall to the Galey River to the south and to a series of tributaries of the Ballyline River to the north. The predominant land use in the immediate surrounds of the site is agriculture with some commercial forestry.

2.3. The site has a total area of 364 hectares and the development footprint will occupy an area of c 27.54 ha. The area is rural in character and settlement patterns typically comprise one-off housing and minor ribbon development along the local road network. The greatest density of settlement occurs to the northwest and southwest of the development site. Community facilities, sports and recreational facilities are concentrated in nearby settlements.

2.4. There are a number of wind farms in the area surrounding the site including Tullahennel c 2.4km to the northwest and Leanamore c 2.5km to the northeast. The

permitted Ballylonford Wind Farm which is adjacent to Tullahennel is approximately 2km to the northwest.

3.0 Proposed Development

3.1. A detailed description of the proposed development is provided in the public notices and the EIAR submitted with the application. It includes the following:

- 12 no. turbines (maximum tip height of 150m) with associated foundations and hard stand areas.
- Permanent meteorological mast (90m) and associated foundation and hardstand area.
- New (6.85km) and upgraded (4.43km) internal site service and access tracks.
- Underground 33 kV electric cabling between turbines within the wind farm and wind farm substation.
- 6 no. peat deposition areas located across the windfarm site.
- 2 no. site entrances, one permanent and one temporary.
- 225m underground cable connection from the 110kV wind farm substation to the existing 110 kV transmission line due east of the windfarm.
- 110 kV substation.
- New junction off the L6021 at the north-east of the site to facilitate construction and access.
- New junction off the L1009 on the west side of the site to facilitate construction and access.
- 2 no. temporary construction compounds.
- Associated surface water management systems.
- Tree felling of c 3.15 ha of conifer trees to facilitate site development.
- Temporary works on sections of the public road along the turbine delivery route (including hedge/tree cutting, relocation of power lines/poles, lampposts, signage and local road widening).

The application is seeking a ten-year permission and an operational period of 30 years from the date of commissioning. The proposed windfarm will have a potential output of c 55MW of electricity.

The application is supported by an Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS).

3.2. The overall layout of the proposed development is shown in Fig 2-3 of the EIAR and the drawings supporting the application. A detailed description of the proposed development is contained in Chapter 2 of the EIAR. The main components of the proposal are described below for the information of the Board.

- The wind turbines would have a maximum height of 150m and the final turbine type will be chosen in advance of construction. The turbines would incorporate tubular towers and three blades and would be finished in white, off-white or grey to correspond with the colour scheme of existing turbines. The turbines would be connected by underground cabling within the site.
- Each turbine would have a reinforced concrete base pad foundation, which will be c 28m in diameter and installed to an excavation depth of c.6m below ground level, depending on ground conditions. Piled foundations may be required depending on detailed geotechnical ground investigations that will be carried out prior to construction.
- Each turbine would have an associated hard stand area and temporary laydown area adjacent to the foundations, to accommodate the delivery and temporary storage of turbine components and to support cranes during erection. The hardstand areas would be excavated and have a foundation depth of c 0.5-1.5m depending on local conditions.
- A permanent meteorological mast would be erected c 220m southeast of Turbine 2 (T2) and 180m west of T4 and would be up to 90m in height. It would have a foundation of c 25m2 and hardstand area of 100m2.
- Access around the site would be provided via existing access roads (which will be upgraded) and by the construction of new roads (Fig 2-3). The roads would be ground bearing/excavated roads or floating roads depending on the depths of the peat and local topography. They would have a standard width of 5m with surface water collection drains on either side. Overall, a total of

11.28km of road infrastructure would be required which would consists of 6.85km of new internal access roads and 4.43km of upgraded and widened existing access tracks.

- The main entrance to the site would be via a new entrance off the L6021 on the north eastern side of the site. This access would remain as the permanent access for the operational life of the wind farm development. A second temporary entrance to facilitate construction and access would be provided off the L1009 on the western side of the site. Following construction this access would be closed with controlled access as required (Fig 2-6).
- The temporary construction compounds would be set up at the commencement of construction and would be used as a secure storage area for construction materials and would also contain temporary site cabins to provide welfare facilities for staff. Construction compound No.1(4750m2) would be located to the east of the site adjacent to the main entrance and adjacent to T10. Compound No. 2 (1375m2) would be positioned towards the western side of the site near T2.
- A total of 6 no. peat deposition areas are proposed across the site (Fig 2-8). Each area has been selected based on an examination of suitable cut over or local depressions that are suitable for the permanent storage of peat. Once excavation and construction works are complete, the peat deposition areas will be graded and vegetated. The areas are located strategically so as to minimise the movement of excavated material from where it is removed.
- A site surface water management system would be constructed on the site to attenuate run-off, protect against soil erosion and safeguard downstream water quality. It would be implemented along all the works areas, including all internal site access roads, storage areas, crane hardstand areas and site construction compounds. Details are provided in the submitted drawings.
- A total of 3.15 ha of forestry would be felled to facilitate construction of T1 and T7 (Fig 2-9). It is proposed to fell a distance of 93m around turbines, in line with the required clearance for bats. Replacement forestry would be planted at the north of the site adjacent to T7 (Fig 2-10).

- There are two options for the grid connection. The preferred option is to connect the proposed windfarm by means of a 225m long underground cable to the existing Tarbert to Tralee 110kV line which is located to the east of the windfarm. This would require the installation of two new lattice towers within the existing overhead line. This preferred grid connection is included within the redline boundary of the application (Fig 2-11).
- The alternative option is to connect via an underground cable to the previously granted Tullamore Solar project to the south. The alternative cable would be located along the existing road network and would connect into the permitted solar farm substation(Fig 2-12). The alternative grid connection is not included within the red boundary but both options have been assessed in the EIAR.
- The substation would occupy an area of c 1.35ha and would comprise an outdoor electrical yard and 2 no. buildings. The substation buildings and compound would be contained within a 2.6m high galvanised steel palisade fence. A soil berm, planted with a mix of native trees would be provided outside the fence to provide screening.

3.3. It is estimated that the proposed development will take 18 months to complete.

4.0 Submissions

The following provides a summary of the submissions received from prescribed bodies, observers and the planning authority.

4.1. Prescribed Bodies

Development Applications Unit

- Part of the site is within the catchment of the Lower River Shannon SAC. (Site code: 002165). Clarification is required in relation to what scale of OSI map is being referred to when a 50m buffer is to be left between stock-piled peat and nearest OSI mapped watercourse (section 6.8.6.4 of EIAR). A number of wind farm construction sites have experienced unforeseen problems with floating roads on peat, and the geotechnical stability of the proposed development would need to be thoroughly professionally and critically examined prior to construction.

- The development site is used by wintering hen harrier and it is likely that hen harrier using the site are those breeding in the nearby Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code: 004161). Information available to the NPWS indicates that an area within the proposed development boundary has been used for several years, including during winter 2020/2021 as a winter roost by at least three hen harriers. The presence of the winter roost is not mentioned in the EIAR.
- The inclusion of turbines 1, 2, 3 and 4 in the proposed development would seems to be premature until the extent and value of this roosting area to hen harrier is established. Given the likely importance of these wintering sites to the breeding population of the nearby SPA, the loss of the site would not be insignificant. The importance of this roost site needs to be assessed as part of the EIAR and may also need to be assessed as part of the Appropriate Assessment.
- With regard to the proposals for the post-planning agreement for management measures with the NPWS, there is currently no NPWS Conservation Ranger present in North Kerry and it cannot be guaranteed that this procedure can be achieved by the NPWS with the urgent construction schedule that may be anticipated by the developer.
- The site is a drained partly cutaway peatland and the development will involve considerable peat extraction and drainage maintenance. In a number of similar developments on deep peat bogs, the amount of peat required to be abstracted has been underestimated by initial assessments. The impact of CO_2 emissions during construction and over the lifetime of the wind farm need to be taken into account in the assessment of cumulative effects, compared to the alternative option of re-wetting parts or all of the peatland. All options to reduce emissions, such as partial rewetting of the bog as part of this development should be assessed.
- There is insufficient information in the EIAR to assess the impact of the proposed development on Ribbonworth, which is listed in the Flora Protection Order and is protected under section 21 of the Wildlife Act. A survey of the site for this species should be carried out, particularly in the area at, or, near Turbine No 5 from which the species has been recorded.

- It is recommended that in the event of planning permission being granted that a condition be attached which takes into account the need for bird/bats mortality monitoring.

Inland Fisheries Ireland

- Any instream works or works that may impact directly on a watercourse should only be carried out between July 1st to September 30th in each year so as to avoid impacting on the aquatic habitat during the spawning season. Appropriate scheduling of works should be facilitated.
- Under the Water Framework Directive (WFD) classification programme, the Tarmon Stream has been characterised as at risk with peat extraction and hydromorphological changes identified as significant pressures. While the Ballylongford Stream recorded a Q4 in 2017, the WFD risk is under review, with siltation due to wind farm development identified as a risk. The status of the Galey River is also under review with hydromorphological pressure again identified. It also achieved Q4 in 2017.
- Decomposition of peat and subsequent leaching to watercourses is a cause of increased ammonia and dissolved organic carbon (DOC) loads to rivers. Ammonia can be directly toxic to fish and other aquatic organisms. IFI seeks confirmation that the planned windfarm and siting of the turbines and road network will not prevent rivers surrounding and draining the site from achieving 'not at risk' status under the WFD. It is imperative that mitigation measures are in place and adhered to in full and that monitoring continues post construction to confirm that there has been no impact to water quality during construction, or over the lifetime of the wind farm.
- It is particularly important during the construction phase that sufficient retention time in the settlement ponds is available to ensure that deleterious matter is not discharged to drainage or surface waters. The settlement ponds should be maintained, where appropriate, during the operational phase.
- The final CEMP, environmental monitoring plan and culvert/water crossing designs should be agreed in advance with IFI and include post construction monitoring. All mitigation measures should be identified in tender documents

and the mitigation measures should be in place at the commencement of works.

Transport Infrastructure Ireland

- The haul route includes the N69. Subject to the outcome of the Road Safety Audit there is no objection in principle to the proposals provided the works ensure the ongoing safety for all road users and that the strategic function of the national road is protected.
- An abnormal load assessment should be undertaken to assess the impact of any abnormal loads and structures on national roads and to confirm their capacity to accommodate such loads where relevant.
- Recommends conditions in the event of a grant of permission.

TII note that any works to national roads, may require licence and other consents and that the submission should not be taken as consent for any such approvals, agreements or licences required under separate processes.

Irish Water

- There are critical raw water sources for a number of public water supplies within the area, including the Listowel, Ballylongford and Moyvane supplies. It is critical that these sources are protected from any possible pollution during construction of the proposed windfarm.
- There are existing water mains in and adjacent to public roads along the route infrastructure and along proposed delivery routes. There are asbestos concrete pipes crossing the proposed component delivery route close to Nodes 3 and 12 as included on Dwg No 19876-MWP-00-00-SK-C-0008. These watermains would be particularly sensitive to any potential vibration associated with the movement of heavy loads.
- Irish Water have no objection to the development subject to conditions.

Irish Aviation Authority

- The wind farm is within SHA ILS 06 (LOC06) coverage area and may have an impact on ILS 06 flight check profiles. It is recommended that FCSL, who are currently flight checking NAVAIDS equipment, complete an assessment.

Shannon Airport Authority

- The technical assessment of the potential effects of the 12 no. turbine locations (based on GPS data for individual turbine locations plus Above Mean Sea Level (AMSL) data and stated turbine design heights) indicates that the development will not have any effect on Shannon Airport Obstruction Limitation Surfaces (OLS).
- The IAA have stated that the developer will need FCSL to assess the development to ensure that it does not affect FCSL's ability to complete flight checks at Shannon Airport.
- The IAA have indicated that taking a median co-ordinate of the development and the site elevation and turbine blade height into consideration, an Instrument Flight Procedure (IFP) assessment is not indicated.
- When construction starts, the turbines will need to be notified to the IAA, as Area 1 obstacles for inclusion in the Aeronautical Charts.
- Standard requirements will need to be applied regarding marking and lighting of wind turbines.

4.2. Observers

Submissions were received from 8 no. observers and the main issues raised relate to the following:

Public Consultation

- The location of the turbines was decided by the time the public consultation brochure was received (9th September 2020), which excluded residents from the overall process.
- Lack of public consultation with no public meetings and no accessible displays. The two places where the application could be physically viewed, one in the council offices in Tralee and one in the Bord's offices in Dublin were outside the 5km zone imposed due to Covid restrictions.
- Despite the fact that house (No 244) is 640m from T6, 755m from T4 and 450 m from the largest peat depot on the site, there was no active engagement by any representative or agent acting on behalf of the applicant.

- The developer organised webinars but in an area of poor broadband, many were disenfranchised.

Landscape & Visual Impact

- Adverse impacts on the visual amenities of the area.
- The area consists of a dramatic open landscape of raised and flat bog and a number of turbines are already visible in the view. The proposed development will close the ring of turbines to completely encircle the village of Ballylongford and the surrounding area.
- Large turbines in close proximity to residential properties which will create an eyesore.
- The turbines will be visible over a considerable distance and will alter the landscape character of the area.
- It is accepted in the EIAR that given the size of the turbine structures and their position within a relatively open flat landscape that a visual impact is unavoidable. Viewpoint 14 which is taken from Guiney's' Cross Roads is defined as Moderate, adverse. Observers' house is closer and would therefore merit an adverse impact. The house is excluded from the photomontage.
- The photomontages submitted portray turbines as static, which is not the case.

Impacts on Residential Amenity

- Due to the pandemic restrictions the company and its consultants have completed their noise, visual and other impact assessments from the public road. Houses set back from the roads have therefore not been properly considered.
- Potential effects on phone, tv and other signals.
- Cumulative effects of noise associated with the proposed turbines and existing turbines at Leanamore.
- House No 244 will be wedged between a permitted solar farm and the proposed windfarm.

- Observers' house is No 243 (Figure 11-2) and the nearest noise monitoring location is NML5. Consideration should have been given to background noise levels in the absence of impact by any other operating windfarm.
- Amplitude Modulation.
- The 2006 Wind Farm Guidelines are out of date and no longer fit for purpose. The protection afforded by the revised wind energy guidelines will be denied to the local community (more stringent noise limits and requirements in relation to shadow flicker, set back from residential properties and obligations in relation to engagement with local communities and provision of community benefit measures), if the development is granted permission prior to the publication of the new guidelines.

Roads & Traffic

- The road network in the area is narrow and there are safety concerns associated with large vehicles using these roads and the increase in traffic associated with the proposed development.
- Obstruction and delays during construction.
- Access to the wind farm will cross observer's entrance.
- Impacts on local roads, which are used as amenity walking routes all year round. The development will damage this amenity due to increased noise levels, biodiversity losses and visual impacts.
- The construction phase of the development which will last for 18 months is a long time for locals to be denied unrestricted access to parts of the bog for recreational purposes. There has been no consultation with regard to access for those with turbary rights. Improved access to the site arising from the proposed development will encourage increased use and other activities including dumping. There are concerns that access to the area will be permanently cut off as has occurred on other windfarms sites to reduce antisocial behaviour.
- It is unclear if public walking routes/cycleways through the development are included in the overall plans. There should be more emphasis on providing public amenities, cycleways, walkways through the area.

Peat Stability

- Risk of peat slide associated with peat deposition area which is 450m from dwelling house (R244).
- The peat depth reported is grossly underestimated and it was confirmed by the project manager that peat depths up to 20m were recorded at the site. Peat depth has a major bearing in the carbon loss calculation for the site, major implications on the peat stability assessment and for groundwater draw down volumes during the excavation for the turbines. Additional accurate information should be sought from the applicant and include a large number of intrusive ground tests, including trial pits, boreholes and rotary core drilling and the preparation of a suitable and appropriate site investigation report containing a log and a geotechnical analysis of works carried out.

Surface Water & Flooding

- Disagrees with the applicant's statement that the development would lead to a very minor cumulative risk of flooding downstream. In the past 2 years there have been two major flood events at the house identified as No 241 in Fig 11-2 (noise monitoring locations). These were recorded in 2015 and 2020. Flooding downstream is clearly a major risk which will be increased as a result of the proposed development. The applicant has not assessed the cumulative effect of such heavy rainfall events falling on the solar panel arrangement to the south which will result in water entering streams and the Galey River at a much higher velocity.
- There is no reference to the underground river/stream that is visible north east of T5 and then disappears underground. Photographs taken after 7 days of dry weather indicate a significant flow of water. The river flows underground in a north-easterly direction between T5, T7 and T8, T11 and T10. Further information is required.

Carbon Balance

- No consideration has been given to the net gain in CO_2 emissions that would be achieved if the wind farm was located on marginal lands with no peat deposits.
- There has been no consideration of the carbon losses after decommissioning.

- If planning permission is granted the developer should be compelled to return the bog to its original condition.

Biodiversity

- Destruction of habitat and wildlife.
- Contrary to claims in the biodiversity study, badgers, hares, hedgehog, lizards and newt are present on the site. Invasive species are also present (Rhododendron, Japanese knotweed and Himalayan Balsam), which are not identified in the invasive species surveys.
- The Whooper Swan feeding site referred to in the submitted plans is 650m from T1. There were consistently 10 birds feeding at the site between January/February 2021. The suggestion that Whooper Swan do not 'appear' to fly though the site is very vague. Eight birds were observed flying through the site on 27th February 2021. The site is on a bird migration route which poses a risk of collision.
- Whooper Swans forage close to the area and have been observed flying over the path of the turbines marked T1 and T3. The swans are a regular sight flying over Ballylongford Village on their commute to/from their feeding ground. Ducks have also been observed and the number of ducks, particularly breeding pairs is much higher than indicated in the EIAR. Maps are included with the submission showing typical foraging area of Whooper Swan and photographs show ducks in flight over the wind farm site.
- Hen Harrier observations by the applicant have been underestimated.
- The applicant's statement that there are '*near certain confidence level that the proposed wind farm will have no significant effects on any of the protected species/habitats on the site'* should not reassure the Bord or invoke confidence that significant effects will not arise.
- The vantage point surveys which involve observations of birds from a stationary position is flawed when it comes to birds that ground forage and are typically not in flight. The sparse recording of birds is not in keeping with observers experience of seeing/hearing the resident bird species.

- There is a healthy variety of plants in the area which supports an array of life. Contrary to the statements made in the EIAR, there is an abundance of heather which is important for bees. There is evidence of Irish hare, badger, foxes, invertebrates, insects, butterflies and moths on the site.
- Impacts on potential rehabilitation of the bog.

Impacts on European Sites

- Bunaruddee Bog NHA is c 0.9km from the nearest turbine and the substation compound. Bunaruddee Bog is within the flood plain of the River Galey which is an SAC. Part of the River Galey is inside the boundaries of the site and there are watercourses in close proximity to peat deposition areas/site compounds and the substation site. The River Galey SAC connects with the Lower Shannon SAC. Even with mitigation measures there can be no guarantee that potential destructive effects and events relating to the development can be avoided, with impacts on the River Galey, the Lower Shannon SAC and the Shannon Estuary.
- There are concerns regarding the potential impacts arising from the development on populations of qualifying species including Otter and Atlantic Salmon.

Devaluation of Property

- The studies which suggest that devaluation of property does not occur due to the presence of windfarms are selective. Encloses a copy of Ruhr Economic Papers which states that houses in rural areas suffer from devaluation.
- The Centre for Economics and Business Research in Britain suggests that the chances of selling a house within 1km or 2km radius of a wind farm are reduced by 99%. This does not support the applicant's claim that wind turbines do not affect property prices. Other studies conclude that if a wind farm is visible from a house it reduces the sale price by 5-6% and in some cases up to 15%. The observers' property is on the market and potential house buyers have expressed concerns in relation to the proposed solar farm and the wind farm.
- It has been confirmed by a local auctioneer that wind farms, solar farm, masts, pylons etc impact on the marketability of homes.

Human Health

- The development will increase noise levels in the area and as noted by the applicant 'visual impact is unavoidable' which will impact on the health of local residents. The cumulative effects of the permitted solar farm, together with two substations and grid connections will result in a large increase in electromagnetic radiation in the area.
- Low frequency EMF poses a risk to human health and is categorised as a class 2B possible carcinogen by the International Agency for Research on Cancer.
- Health effects associated with shadow flicker.

Cumulative Effects

- To ensure that Ireland meets its targets, it is not necessary to locate all wind turbines along the western seaboard. The continued unchecked erection of wind turbines in north Kerry does not represent proper planning and sustainable development. There is a cluster of 3 wind farms totalling 31 turbines (built or with planning) around Ballylongford. Also visible from the perimeter of the proposed development to the east is Athea (16 turbines) and Moyvane/Knockanure 9 turbines (built/with planning).
- Planning permission has been granted for a solar farm (18/720) c.30m from the back boundary of House No 243 and the proposed windfarm will result in two major infrastructural projects close to the house, with T4 and T6 within 1km of the front of the house.
- It is accepted that local organisations will benefit financially in the short-term arising from the community fund. However, the proposed development in combination with other renewable energy development will result in population decline with impacts on local schools and GAA clubs.

Cultural Heritage

- The impact to Protected Structures in the vicinity of the proposed development have not been properly considered.

Planning and Sustainable Development

- The Regional Spatial & Economic Policy (2020) needs to be taken into account by An Bord Pleanala.
- Its policies include protection/preservation of landscapes, protection/preservation and rewetting of bogs as carbon sinks, protection of biodiversity and that all rural communities must be treated equally.
- The planning zoning for wind farms by Kerry Co Council is derived from the Landscape Character Assessment, which is contrary to this regional policy.

4.3. Planning Authority

The Chief Executives Report considers the site context, planning history of the site and environs, and European, National and local climate change and planning policies. It considers the effects of the proposal on the environment and the proper planning and sustainable development of the area and provides an assessment of the adequacy and conclusions of the EIAR. It also provides the planning authority's view to the decision to be made by the Board. The following provides a summary of the report, the full text of which is available to the Board on the file.

Visual Impact and Landscape Assessment

Having regard to the size and scale of the proposed turbines, relative to the nature of the receiving environment and predominantly flat lands where there is an existing number of wind farms present and yet to be developed, it is considered that the proposed development will have a significant negative impact on the landscape, materially affect protected views and prospects and severely impact the Wild Atlantic Way which makes a significant economic contribution to the North Kerry Area.

The proposed development if permitted would be at variance with the Wind Energy Development Guidelines, 2006 particularly the guidance on development in a flat landscape, interfere with a protected view, contravene Objectives ZL-5 and ZL-1 of the development plan and would therefore be contrary to the proper planning and sustainable development of the area.

Assessment under the Water Framework Directive, soils and geology

Carbon losses associated with the proposed development on a bog site should be a factor in the assessment of the proposed development. Estimated calculations are provided in the EIAR and the figures to derive these calculations should be carefully assessed.

The applicant proposes to store a substantial amount of peat (c 225,456m3) in six peat deposition areas on the site. Based on the information submitted, the planning authority is not satisfied regarding the risk of failure of the retention berms, which could result in an uncontrolled release of peat and the discharge of heavily sedimented water to water courses, which could severely impact on the ability of the watercourses to achieve their WFD objective.

Flood Risk Assessment

It is noted that the site itself is not at risk from flooding. Water quality is of significant concern having regard to the three adjacent water bodies (Ballylongford River, Tarmon Stream and Galey River), all of which are described as 'At Risk' under the WFD 3rd cycle. A surface water management plan has not been submitted. Having regard to the extent of works proposed and the potential for surface water run-off associated with a major storm, the planning authorities concerns in relation to these water bodies remain, notwithstanding the measures outlined in Chapter 8 of the EIAR.

Noise & Vibration

The EIAR states that no cumulative construction activities would occur in sufficient proximity to generate potentially significant cumulative effects. This may not be the case as the permitted solar farm and the Ballylongford Wind Farm remain to be constructed in close proximity to the site. These should have been factored into the assessment of cumulative noise impacts.

Amplitude modulation (AM) should be considered in the EIAR and there is an argument that a condition related to AM should be included if planning permission is granted. It could be argued that turbine noise that is marginally compliant with overall noise limits for the development will potentially be more annoying when AM occurs. Thus, overall noise limits alone cannot protect against nuisance.

Shadow Flicker

The exposure of 25 no. properties to shadow flicker is not acceptable and would severely impact on the residential amenity of the properties concerned.

Ecological Assessment & Natura 2000 Sites.

The habitats on site have not been adequately described to facilitate assessment. Shronowen Bog is considered to be a remnant raised bog as opposed to a lowland

blanket bog. The significant depths of peat encountered by way of peat probes (greater than 7m) supports the view that the bog formed as a raised bog. A portion of the original high bog remains and is unlikely to be dominated by a uniform and homogenous cover of purple-moor grass as outlined.

The habitats mapping is inadequate and should be extended beyond the site boundaries to encompass areas of the adjoining bog which could be impacted by the proposal. It is noted that the Protected Flora survey does not extend to Annex IV and Annex V which includes Sphagnum mosses and Cladonia lichens likely to be found on the bog. A Habitat Management Plan should have been prepared with a view to enhancing peatlands habitats and the biodiversity value of the site. Refers to the Scottish Government, Scottish Natura Heritage, SEPA (2017) *'Guidance on Development on Peatlands'* which recommends the preparation of peat restoration plans and post construction habitat management of peatlands.

AA Screening Report

The screening out of Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA should be carefully considered. It does not appear to be known if the Hen Harriers observed on the site form part of the SPA populations.

The wintering bird surveys identified foraging grounds for a small flock of wintering Whooper Swan to the northwest of the site. While flight paths between the foraging grounds have not been identified, the NIS surmises that Whooper Swan do not routinely commute through the proposed wind farm. The AA should consider the potential for disturbance/displacement of these birds particularly during the construction stage. The AA should take impacts on Otter populations into consideration.

NIS and EIAR - Water Quality

There are elements of uncertainty regarding the potential to protect water quality particularly due to the location of the proposal on deep peat and the proposed peat storage areas. The potential for seepage or discharge of suspended solids and/or ammonia has not been carefully considered, particularly given the location of the proposed development upstream of the Lower River Shannon SAC. Other elements of uncertainty arise from in-combination effects regarding ongoing peat extraction within and adjoining the development site and the possibility of extreme weather

events. Based on the information submitted, the planning authority is not satisfied that the potential for water quality impacts downstream can be ruled out.

NIS and EIAR - Flood risk management

Drainage works are proposed as part of the development, including the clearing out of existing drains which may be slumped in places. The proposed development, taken in conjunction with other development and activities on site, should not compromise the ability of the overall bog to attenuate water in the catchment. Areas vulnerable to fluvial flood risk are located downstream both to the north and south of the proposed development. Increased run-off rates can increase bankside erosion and instability downstream potentially impacting aquatic habitat.

Carbon balance

Carbon losses will arise due to the disturbance of peat. Site selection was restricted to Co. Kerry and a wider search may have uncovered a suitable site not located on a wetland with deep peat deposits. It is considered that greater weight should have been given to potential carbon emissions in the consideration of alternatives.

In-combination effects

The potential for in-combination effects should take the following into consideration

(i) The application states that peat extraction is likely to continue on the site during the construction and operational phases of the development. Peat extraction has the potential to impact on the environment by itself, or by way of in-combination effects and should therefore be considered in the assessment.

(ii) The improved road network may facilitate increased drainage, extraction of peat and associated carbon losses, dumping and unauthorised infill.

(iii) Mitigation measures outlined including those relating to bio-security and invasive species management should cater for other developments/activities on site, including those relating to ongoing peat extraction.

The Climate Action Plan 2019 includes a measure to restore/rewet all raised bogs designated as SAC's and NHA's within three cycles of the National Raised Bog SAC

Management Plan 2017-2022. Shronowen Bog is not a designated peatland but the nearby Bunaruddee Bog is. The potential for in combination effects arising from this measure, if any, should be considered. The National Peatlands Strategy (2015) and the National Raised Bog SAC Management Plan 2017-2022 should also be considered, where relevant.

Archaeological, Architectural and Cultural Heritage

The EIAR states that the alternative grid connection route (underground cable) passes though the Zone of Notification around recorded monument (KE005-092), a levelled enclosure in Tullamore townland. It also notes that some exceptional artefacts have been recovered during turf cutting up to the recent past. However, the report assesses the impacts of the proposed development on potential sub-surface archaeology as low. It suggests archaeological monitoring as a mitigation measure, which is considered wholly inadequate given the scale and extent of the proposed development.

Residential Amenity

There are 1458 residential units within 5km of the proposed development. The potential effects arising from noise, overshadowing and shadow flicker are considered significant and will impact on dwellings, private amenity spaces and community areas. The proposed windfarm would impact on the amenity and quality of life of communities and individuals who use the application site as a recreation resource.

Roads, Transportation and Marine

The Roads Authority has significant concerns in relation to the long-term impacts on the roads network in the area. The majority of the network which will be utilised comprise peat/bog rampart roads of narrow widths and low carrying capacity. There is a high risk that the proposed development will have a significant and widespread impact on the road network. The application does not make provision to protect the integrity, or, for the remediation of the road network during the construction or operational phases of the development.

The planning authority has based its assessment on an underground cable connection from the windfarm substation to the existing 110kV transmission line to the east of the wind farm. Any alternative proposals would have an even greater impact on the road network.

Conclusion

The planning authority has significant reservations regarding the conclusion reached in the EIAR and strongly recommends that permission be refused for the proposed development.

5.0 Planning History

ABP - 306727 - Following consultations under section 37B of the Planning and Development Act, 2000, as amended, the Board determined that the proposed development, comprising a 12-turbine windfarm, constitutes Strategic Infrastructure Development and that an application should be made directly to the Board under section 37E of the Act.

There are no details of any relevant planning history relating to the site. In the wider area planning permission has been granted for the following energy projects, which are not yet constructed.

ABP - 302681-18 – Permission granted for a solar farm c1.5km south of the proposed development.

ABP - 304807-19 – Permission granted for Ballylongford Wind Farm c 3km to the northwest of the proposed development.

There are a number of operating wind farms in the area surrounding the site including Tullahennel c 2.4km to the northwest and Leanamore c 2.5km to the northeast.

6.0 Further Information

Further information on the application was sought by the Board on July 22nd 2021. The Board requested the applicant to respond to the matters raised in the various submissions made in respect of the application. It also sought further clarity on the turbine model/dimensions proposed, more detailed information on background noise

levels and the methodology used and the assumptions underlying the carbon losses and savings associated with the proposed windfarm.

The response to further information was received by the Board on October 14th, 2021. It includes the following:

- A comprehensive response to all of the matters raised in the submissions.
- Details of the turbines proposed including Dwg No 19876-MWP-00-00-DR-C-5420-P01 (Turbine and Hardstand Details).
- Photomontage from Carrigfoyle Castle (Appendix 1).
- Carbon Emissions Assessment Report (Appendix 2).
- Details of correspondence with NPWS (Appendix 3 & 4).
- Aviation Report (Appendix 5).
- Noise Report (Appendix 6).

The submitted information clarified that permission is being sought for the Vestas 136 Model wind turbine as illustrated in Dwg No 19876-MWP-00-00-DR-C-5420-P01 included with the submission. The EIAR assessments are based on the Vestas 136 Model and on the dimensions provided which include a tip height of 150m, a hub height of 82m, rotor diameter of 136m and blade length of 68m. The application does not seek permission for a range of turbine types.

In response to the continued concerns expressed by the DAU, regarding the assessment of a hen harrier roost on the site, the Board invited additional comments from the applicant. The applicant's response was received on May 11th, 2022 and cross circulated to all parties, which generated additional responses as summarised below.

7.0 Additional Submissions

7.1. Department of Housing, Local Government and Heritage

The response as co-ordinated by the DAU recommends the following to protect the identified Hen Harrier roost site that exists within the site:

- the omission of T1 and T2, associated infrastructure and temporary site compound.

- the recommended mitigation is implemented, and.
- that roost monitoring is carried out for Years 1-5 after commencement of construction and annual hen harrier monitoring reports are forwarded to the planning authority and the NPWS.

7.2. **Planning Authority**

Kerry Co. Council concluded that the habitat mapping had not been undertaken in any meaningful way. It stated that where cutover raised bog habitats are identified, these should be classified and assessed within the context of the NPWS (2020) Irish Wildlife Manual No 128 'The Habitats of Cutover Raised Bog'. In addition, the Flora Protection survey methodology of the EIAR does not appear to have extended to Annex IV or Annex V of the EU Habitats Directive, which includes Sphagnum mosses and Cladonia lichens likely to be found in the bog. Impacts on Otter movements have not been adequately addressed in the AA and water quality concerns remain.

7.3. **John & Dympna O Carroll**

Refers to the applicant's response to further information under section 3.1.3.3 as follows:

- The applicant did not brief the landowner on the technical aspects of the proposed development (visual intrusion, shadow flicker, noise etc).
- Prior to signing the contract, the landowner was not aware that other family members were opposed to this development.
- The applicant requested that T6 be removed from the proposal or compensation be provided for any potential looses incurred in the sale of their house. At no point did the observers suggest that their house be purchased by the applicant.
- The applicant's recommendation of a reactionary condition in relation to noise is very unsatisfactory, which should be rejected. The dismissal of the Draft Wind Energy Development Guidelines on noise shows lack of interest in engaging with stakeholders.
- Failure to address the cumulative effects of the proposed windfarm and the permitted windfarm on the residents of Tullamore townland.

- Failure to address the volume of water that will be displaced by the concrete bases for the turbines and the increase in velocity combined with run-off from the nearby solar panels.
- To suggest that the construction stage alone will only affect local amenity is an insult to the local community.
- Concurs with the applicant that people will come to live in the area in the future as they will have the option of buying a cheap house that has been devalued by the windfarm. A letter from the estate agent associated with the sale of the house is enclosed which states that the proposed windfarm development impacted on the property value achieved for this house.
- Contends that their house was intentionally removed from the photomontages.

7.4. **Martin Walsh**

Refers to the applicant's response to further information under section 3.1.3.3 as follows:

- There are large areas of the bog which remain undisturbed and are still acting as a carbon sink. Turf cutting will reduce going forward and future degradation of the bog will only take place if permission is granted for the windfarm.
- The response ignores the comments made by the project manager who stated that depths of up to 20m of peat were encountered on the site. Is of the view that peat depts have been underestimated and the Board should have them verified by an independent consultant.
- No effort has been made to further investigate the underground river, which is familiar to many people living locally.

7.5. **Catherine Keane & Charles Mc Carthy**

The submission reiterates the points made in the previous submission to the Board regarding lack of consultation, property devaluation, the use of research which supports applicant's case, the location of house between proposed wind farm and permitted solar farm, excessive noise from proposed turbines and cumulative impacts with other energy developments in the locality. It is contended that the cumulative impacts of existing/permitted windfarms and other infrastructure (peat

deposition area, substation) is not properly assessed in the photomontages and that houses affected have been omitted.

The proximity of the largest peat storage area to observers' house is raised as an issue of concern and it is considered that the construction of improved roads will attract more people into the area which will impact on the amenity and biodiversity of the area. roads

8.0 Policy Context

8.1. Introduction

There is continually evolving International, European and national policy supporting the development of renewable energy projects to enable transition to a low carbon energy economy and to meet international obligations to address climate change. Irish policy is framed in the context of these European and other International policy initiatives. Chapter 1 of the EIAR provides a review of legislation, polices and guidance which are relevant to wind energy development.

8.2. National Policy

Climate Action Plan 2021

The recently adopted plan commits Ireland to a legally binding target of net-zero greenhouse gas emissions by 2050, with a 51% reduction by 2030. The plan sets out indicative ranges of emission reductions for each sector of the economy by 2030. Among the most critical measures in the plan is to increase the proportion of renewable electricity to up to 80% by 2030, including a mix of offshore/onshore wind and solar PV.

Irelands Transition to a Low Carbon Energy Future 2015-2030

A Government White Paper entitled *'Irelands Transition to a Low Carbon Energy Future 2015-2030'* was published in December 2015. It was developed to guide policy and actions that the Government intends to take in the energy sector up to 2030 and reaching out to 2050, to ensure a low carbon future that maintains Ireland's competitiveness and ensures a supply of affordable energy.

It acknowledges that a radical transformation of Ireland's energy sector is required to meet climate change objectives. A low carbon future would involve, inter alia, greater use of electricity from renewable sources, of which the country has a plentiful supply, and greater use of electricity for heating and as a fuel for transport. The White Paper repeats the target of generating 40% of the country's electricity from renewable sources by 2020.

It envisages on-shore wind driven plants continuing to be the main contributor to renewable electricity. It is stated in Chapter 4 that to achieve the target in relation to renewable energy the average rate of build of on-shore wind generation will need to increase up to 260MW per year from the current rate of 170MW. A total of 3500-4000MW on-shore renewable electricity is required in comparison to the December 2015 figure of 2500MW.

It confirmed that onshore wind is the cheapest form of renewable energy in Ireland, stating that it is:

'Onshore wind continues to be the main contributor (18.2% of total generation and 81% of RES-E in 2014). It is a proven technology and Ireland's abundant wind resource means that a wind generator in Ireland generates more electricity in Ireland than similar installations in other countries. This result in a lower cost of support.

Strategy for Renewable Energy 2012-2020

The Strategy for Renewable Energy 2012-2020, published by the DCENR in May 2012 outlines the strategic goals which underpin the Government's energy and policy objectives. It outlines the key actions to be undertaken to support the development of each of the renewable energy sectors to deliver on Ireland's binding 2020 targets under the Directive. It sets out five strategic goals, which includes

Strategic Goal 1 – Progressively more renewable electricity from onshore and offshore wind power for the domestic and export markets.

National Mitigation Plan 2017

The National Mitigation Plan was published in July 2017 as required under the Climate Action and Low Carbon Development Act 2017. It outlines a range of measures to lay the foundations for transitioning Ireland to a low carbon, climate resilient and environmentally sustainable economy by 2050. It recognises that Ireland has abundant, diverse and indigenous renewable energy resources which

will be critical to decarbonising our energy system, including electricity generation. Onshore wind has to date been the most competitive renewable energy technology in Ireland, accounting for 22.8% of electricity generation in 2015.

With regard to wind energy and meeting targets, the National Mitigation Plan states:

"To date, wind energy has been the largest driver of growth in renewable electricity. The total amount of renewable generation connected to the national grid at December 2016 was 3,120MW, of which wind generation was approximately 2,796 MW, hydro was 238MW and biomass was 86MW. EirGrid estimates that a total of between 3,900MW and 4,300MW of onshore renewable generation capacity will be required to allow Ireland to achieve 40% renewable electricity by 2020. This leaves a further requirement of between 780MW and 1,180MW to be installed by 2020 if the 2020 electricity target is to be reached".

It refers to the quantity of carbon stored in Irish Peatlands (64% of total soil organic carbon stock present) and to the National Peatlands Strategy as setting out how to sustainably manage and protect/conserve this national resource. It does not include any explicit reference to the potential for peatland restoration/rehabilitation to contribute to climate change mitigation.

Project Ireland 2040 - The National Planning Framework

Project Ireland 2040 - The National Planning Framework (NPF) which was published in 2018 is a strategic plan to guide development and investment out to 2040. It is envisaged that the population of the country will increase by up to 1 million by that date and the strategy seeks to plan for the demands that growth will place on the environment and the social and economic fabric of the country.

The Plan sets out 10 goals, referred to as National Strategic Outcomes. One of the key goals (National Strategic Outcome 8) is that of 'Transition to a Low Carbon and Climate Resilient Society'. It acknowledges that Ireland's energy policy is focussed on the pillars of sustainability, security of supply and competitiveness.

"In the energy sector, transition to a low carbon economy from renewable sources of energy is an integral part of Ireland's climate change strategy and renewable energies are a means of reducing our reliance on fossil fuels".

It is an objective that:

"40% of our electricity need will be delivered from renewable sources by 2020 with a strategic aim to increase renewable deployment in line with EU targets and national policy objectives out to 2030 and beyond".

National Policy Objective 55 states:

"Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050".

The National Peatlands Strategy 2015-2025 (DAHG, 2015)

The Strategy sets out principles to guide Government policy and to provide a long-term framework for the responsible management of all peatlands to optimise their social, environmental and economic contribution to the State. It proposes that the potential contribution of peatlands rehabilitation, restoration and enhancement to climate change mitigation and adaptation be fully explored, in addition to their potential to contribute to a low carbon economy through use of sites for renewable energy.

The Strategy provides a framework for determining and ensuring the most appropriate future use of cutover and cutaway bogs. It recognises that such bogs have a number of advantages over other categories of land in terms of potential windfarm development of scale.

*'The appropriate development of such bogs may assist energy projects which will contribute to meeting our renewable energy targets and developing an export market for renewable electricity. Windfarms on cutaway bogs could be developed in conjunction with recreational and natural amenity' (*Page 29).

The Strategy also recognises the role of peatlands in climate, their ability to sequester carbon and the need for management of non-designated peatlands to stop carbon loss.

It sets out a number of principles that will be used to guide sectoral policies, plans and decisions regarding the future use of peatlands. The following are considered the most relevant to the proposed development:

- Ireland's peatlands will continue to be used for many purposes including agriculture, development, peat extraction, forestry, conservation and amenity (P1).
- The potential economic, environmental and social benefits and costs of peatland uses will be considered and applied to policy and land use decisions (P2).
- In deciding on the most appropriate after-use of cutaway peatlands, consideration shall be given to encouraging, where possible, the return to a natural functioning peatland ecosystem. This will require re-wetting of the cutaway peatlands which may lead in time to the restoration of the peatland ecosystem (P17).
- Consideration will be given to how best cutaway bogs can contribute to a low carbon economy through their use as sites for renewable energy (P21).
- Policies and decisions relating to the use of peatlands shall take full consideration of potential impacts on water quality and the attainment by the State of mandatory water quality standards (P25).

8.3. Regional Policy

Regional Spatial & Economic Strategy for the Southern Region, 2020

This document is a 12-year strategic regional development framework that will facilitate the delivery of the NPF. It states that the Southern Regional Assembly will support the implementation of the Climate Action Plan, 2019 by prioritising decarbonisation, resource efficiency and climate resilience.

The Strategy states that opportunities for both commercial and community wind energy projects should be harnessed. Objective (RPO 99) seeks *"…to support the sustainable development of renewable wind energy (on shore and off shore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines."*

8.4. Local Policy

The operative plan is the **Kerry County Council Development Plan 2015-2021.** Chapter 12 is dedicated to Zoning and Landscape. The site is located in an area zoned 'Rural General' where it is the stated (Section 12.2.1):

'Rural landscapes within this designation generally have a higher capacity to absorb development that other rural landscapes (Rural Prime/Secondary Special Amenity). It is important that development in these areas be integrated into their surroundings in order to minimise the effect on the landscape and to maximise the potential for development'.

Volume 3 of the Plan contains a series of maps indicating special amenity areas and views and prospects listed for protection. Map12.1 a, includes the development site. The closest Prime Special Amenity area extends along the coast to the west, to the north and south of Ballybunnion. An area of Secondary Special Amenity along the coast to the north extends westwards from Ballylongford Bay.

The only protected View/Prospect that is orientated towards the proposed development site, occurs on a local road to the west (L -1004) that runs along the eastern side of Knockanore Mountain.

Regarding the protection of views and prospects Section 12.4 of the Plan states:

'It is not proposed that the protection and conservation of these views and prospects should give rise to the prohibition of development along these routes, but development where permitted, should not seriously hinder or obstruct these views and should be designed and located to minimise their impacts'.

Relevant objectives include:

ZL-1 – Protect the landscape of the County as a major economic asset and an invaluable amenity which contributes to the quality of people's lives.

ZL-5 – Preserve the views and prospects as defined on Map No's 12.1, 12.1a-12.1u.

Chapter 7 of the Plan (Section 7.8 Energy/Power Provision) includes specific objectives for wind, solar hydro and biomass energy and recognises that in terms of alternative energy, the County has huge potential for the development of wind.

Relevant objectives include:

EP-1 - Support and facilitate the sustainable provision of a reliable energy supply in the County, with emphasis on increasing energy supplies derived from renewable resources whilst seeking to protect and maintain biodiversity, archaeological and built heritage, the landscape and residential amenity.

EP-12 – Not to permit the development of windfarms in areas designated as 'open to consideration' in the Tralee and Listowel Municipal Districts until 80% of the turbines with permission in those areas, on the date of adoption of the Plan, have either been erected or the relevant permission has expired or a combination of both and the cumulative effect of all permitted turbines in the vicinity of the proposal have been fully assessed and monitored.

The **Kerry Renewable Energy Strategy** is set out in the Kerry County Development Plan and was prepared as part of the 2009-2015 Plan (as varied). It is the current policy and zoning document that relates to wind energy development in the county. It identifies 'Wind Deployment Zones', i.e., areas where wind energy development is considered appropriate. Two categories of Wind Deployment Zones are identified and mapped (Map 7.6) which include 'Strategic Search Areas' and 'Areas Open to Consideration'. The strategy sets out the development criteria, development management standards and objectives for renewable energy in the County to be used in the assessment of all planning applications for such developments.

Objective N7 7 21 – To maximise the development of all renewable energies at appropriate locations in a manner consistent with the proper planning and sustainable development of the county. This will include requirements and consideration in relation to; landscape; cultural heritage; Natura 2000 sites and the Habitats and Birds Directive; the objectives of the Water Framework Directive; Flood Directive; Sustainable Forestry Management; and Best Practices in the production of energy crops.

The site is located in an area zoned 'Open to Consideration' (Map 7.6) These areas are identified as having fewer suitable sites than Strategic Site Search Areas. They also stated to have capacity limits and cumulative impacts require to be monitored.

Relevant objectives for these areas include:

NH 7 33 – Conformity with existing/approved wind farms to avoid visual clutter and consideration of cumulative effects.

NH 7 34 - Projects to be designed in accordance with Wind Energy Guidelines 2006 or any update of these guidelines. Suitable buffers to be provided between the development and Natura 2000 site boundaries. The Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA will require a buffer of 250m between the SPA boundary and operating wind turbines.

NH 7 36 - Applications to comply with the strategy and the provisions of the development plan.

NH 7 37 – Applications to be accompanied by a technical assessment in relation to slope stability landslide susceptibility of the development site and the proposed project.

Proposals shall demonstrate conformity with existing and approved wind farms to avoid visual clutter and how they have taken regard of potential cumulative, effects where appropriate.

Draft Kerry County Development Plan 2022-2028

A draft plan has been prepared and the period during which submissions could be made on Material Alterations to the Draft closed on June 16th, 2022.

Areas of the County have been designated as 'Open to Consideration' for wind farm development. 'Repower Areas' have also been identified. Areas outside these areas are not considered suitable for commercial wind farm development due to their overall sensitivity. The site of the proposed windfarm is located outside these designated areas in the Draft Plan.

Guidelines/Reference documents

Wind Energy Development Guidelines for Planning Authorities 2006

The Wind Energy Development Guidelines for Planning Authorities 2006 constitutes Section 28 statutory guidance for wind energy development, including on provisions of the development plan and, in development management in the consideration of design, siting, spatial extent and scale, layout and height of turbines and cumulative effect having regard to its location within one of the six landscape character types and their identified sensitivities. Guidance is also provided on matters such as noise, shadow flicker, natural heritage, archaeology, architectural heritage, ground conditions, aircraft safety, wind take and cumulative effects.

Appendix 4 provides further details in relation to Best Practice for Wind Energy Developments in Peatlands.

Draft Revised Wind Energy Development Guidelines 2019

The Draft Revised Wind Energy Development Guidelines 2019 were published by the Department of Housing, Planning and Local Government in December 2019. The

Guidelines recognise that the proper planning and sustainable development of areas and regions must be taken into account when planning applications are being assessed, irrespective of the significant role renewable energy has to play in tackling climate change.

The Guidelines note that potential impacts of wind energy development proposals on the landscape including the natural and built environment, must be considered along with legitimate concerns of local communities. The Draft focuses on a number of key aspects, including:

- Acceptable noise thresholds and monitoring frameworks:
- Visual amenity set back and spacing:
- Control of shadow flicker:
- Public consultation and obligatory Community Report, and
- Consideration of the siting, route and design of the proposed grid connection as part of the whole project.

Key aspects include:

- Sound/noise - consistent with WHO standards, proposing a relative rated noise limit of 5 dB(A) above existing background noise within the range of 35 to 43 dB(A), or 43 dB(A) being the maximum noise limit permitted day or night, applicable to outdoor locations at any residential or noise sensitive properties, and taking account of tonal noise, low frequency noise and amplitude modulation and the introduction of noise monitoring regime.
- Visual amenity setback – 4 times tip-height setback from the nearest point of the curtilage of any residential property (500 minimum mandatory setback)
- Shadow flicker – shadow flicker prediction modelling study to accompany applications. The adoption of technology that will shut off each turbine automatically to eliminate shadow flicker.
- Public consultation obligations and community report.
- Community dividend – measures to ensure enduring economic benefit to the community, and
- Grid connections – underground to be the standard approach.

Appendix 4 contains Best Practice for Wind Energy Development in Peatlands.

9.0 Planning Assessment

Introduction

Having regard to the requirements of the Planning and Development Act, 2000 (as amended), this assessment is divided into three main parts, the planning assessment, environmental impact assessment and appropriate assessment.

There are issues which are common to both the planning assessment and the environmental impact assessment and in order to avoid repetition these are considered in the environmental impact assessment section of this report.

I have examined the file and the planning history, considered national, regional and local policy and I have inspected the site and its surrounds. I have assessed the proposed development and considered the various submissions received from the applicant, the planning authority, prescribed bodies and observers. I consider that the key issues arising for determination by the Board in respect of the planning assessment include the following:

- The principle of the development
- Public consultation
- Residential Amenity.

9.1. Principle of the development

In terms of tackling climate change, reducing dependency on fossil fuels in energy production and achieving reduced greenhouse gas emissions, there is clear policy support at international, national, regional and local level for renewable energy development.

Government policies identify the development of renewable energy as a primary contributor in implementing Ireland's climate change strategy and national energy policy. The crucial role of wind energy in electricity production is recognised at national level in the various plans and strategies published by Government including the recently published 'Climate Action Plan 2021, 'National Renewable Energy

Action Plan', 'Irelands Transition to a Low Carbon Future', 'Strategy for Renewable Energy 2012-2020, 'and the 'National Planning Framework'.

Whilst significant progress has been made, Ireland did not meet its 2020 renewable energy targets. The overall share of renewables stood at 13% which was below the country's EU binding target of 16%. The share of renewable electricity (RES-E) was c 39.1 % and Ireland had a national target of 40%.[1] The Climate Action Plan seeks to significantly increase the proportion of renewable electricity to up to 80% by 2030, including a mix of offshore/onshore wind and solar, which presents a major challenge for the State.

It is acknowledged that wind energy has been the largest driver of growth in renewable electricity in the country and will continue to be the main contributor going forward. Significant increases in installed capacity will be required to meet mandatory targets. The proposed development will deliver an additional renewable energy source and contribute to an overarching aim of international/national policy of tackling climate breakdown by reducing greenhouse gases. It will drive continued progress towards a low carbon economy, reduce dependence on fossil fuels, and the decarbonisation of the electricity sector, in line with climate change strategies and energy policies.

An increase in the amount of renewable energy is also supported at regional and county level through the Eastern and Midlands Spatial and Economic Strategy and the Kerry County Development Plan. Both emphasise the importance of energy to economic activity, the necessity to reduce dependence on fossil fuels in energy production and to increase the quantity of energy from renewables, including wind.

The proposed development is situated in an area identified in the current Kerry County Development Plan and the Renewable Energy Strategy as 'Open to Consideration' for wind energy development. The planning authority states that the development of these lands is constrained by the provisions of section 7.6.3 of the development plan which states that lands they can only be considered when the areas designated as 'Strategic' have been developed to their capacity (Objective EP-12), which has not yet occurred.

[1] SEAI Energy in Ireland 2021 Report

I draw the attention of the Board to section 1.6.3 of the EIAR which states that a review of the constructed status of permitted wind farms developments in the Listowel and Tralee municipal districts was completed and submitted to Kerry Co Council in Q1 2019. The review concluded that over 80% of the turbines with permission have been installed (of the 63 permitted turbines, 54 are now built, which constitutes 85.7%). It is also stated that Kerry Co. Council agreed with this conclusion, and I note this has not been rebutted by the planning authority. It would appear therefore that the proposed development is not at variance with Objective EP-12 of the Plan.

The Board will note that the site is strategically located in terms of its proximity to the national electricity grid, the Kilpaddoge to Tralee 110kV overhead line, which runs a short distance to the east of the wind farm development site.

Having regard to the national, regional and local policy support for renewable energy including wind, the location of the proposed development in an area identified as 'Open to Consideration' in the development plan, its proximity to the national electricity transmission system and compliance with the policy objectives for renewable energy development set out in the development plan, I accept that the proposed development is acceptable in principle in this location.

In terms of the overall suitability of the site for the proposed development there are other planning and environmental considerations which are addressed below in the Environmental Impact Assessment and Appropriate Assessment sections of this report

9.2. Public Consultation

It is contended by some of the observers that the applicants did not engage in effective consultation with the public and that the layout was decided in advance of any community engagement.

The applicant provides details of the public consultation process in the EIAR (Appendix 1-4) and the response to further information. A Community Liaison Officer was appointed in 2017 and the first public consultation event occurred in September 2019 and was attended by 40 local residents. Scheduled public consultation events in April 2020 and August 2020 were postponed due to Covid -19 restrictions. The

consultation process continued with letter mailing and two online public consultation webinars. A virtual public consultation room was used to continue the process during Covid restrictions and all upcoming events were advertised in a local newspaper. The consultation process resulted in some changes to the overall design, primarily associated with landscape, visual amenity considerations and noise.

Having regard to the process outlined above, I accept that the applicant has taken all reasonable steps to engage with the local community, including during the particular challenges posed by Covid 19 restrictions. I accept these measures have been effective in terms of alerting the public to the proposed development. I do not therefore consider that the rights of local residents have been compromised in any way and this is evident from local engagement following the lodgement of the application

I am satisfied therefore that the participation of the public has been effective, and the application has been accessible to the public by electronic and hard copy means with adequate times afforded for submissions in accordance with the requirements of Article 6 of the Directive.

9.3. **Residential Amenity**

Many of the observers have concerns regarding the potential impacts that could arise from noise, shadow flicker and visual effects which could impact on their residential amenity. These matters are considered in more detail below in proceeding sections of the report

With regard to noise and vibration, the construction stage has the potential to cause disturbance and annoyance to local residents. However, these impacts will be temporary, of short duration and capable of effective mitigation to reduce potential impacts on the residential amenity of adjoining residential property.

During the operational phase the wind turbine noise levels at all identified receptors within 3km of the wind farm will not exceed the relevant noise limit criteria. No specific noise mitigation measures are therefore required. There are no significant vibrations from an operational wind farm and no mitigation measures are required. No significant effects associated with noise and vibration are therefore likely to arise which would be detrimental to the amenity of property in the vicinity. This matter is considered in more detail in Section 10.11 below (Noise & Vibration).

Shadow flicker can cause annoyance and impact on the amenity of residential receptors. The applicant has committed to a curtailment strategy for all turbines that cause an exceedance in the existing daily and annual shadow flicker thresholds at a distance of up to 10 rotor diameters from the proposed development. This is standard best practice on windfarm sites and subject to the implementation of these measures, I am satisfied that shadow flicker would not result in an unacceptable negative impact on the amenity value of dwellings or other structures. This matter is considered in more detail below under Section 10.5 (Population and Human Health).

Regarding visual impacts, the site of the proposed development is zoned 'Open for Consideration' and is therefore considered suitable for wind energy development, subject to full assessment. I consider that the visual impact of the development both on its own, and, cumulatively with other existing/permitted wind farms in the area has been comprehensively assessed and, in this regard, I refer the Board to Section 10.12 (Landscape) of this report

I accept that the visual impact of the proposed development will vary with distance from the site and the most pronounced visual effects will be experienced by residents closest to the site. The potential for significant adverse effects is identified from Ballyline West (Viewpoint 10) and from Gabbett's Bridge (Viewpoint 12) which are located 1.4km and 0.7km respectively from the site. From here the turbines are viewed as strong vertical elements in an otherwise flat open bog landscape and it is not possible to mitigate these effects. There will, therefore, be an unavoidable visual impact on residential properties close to the site, albeit a small number due to the relatively low density of development in these areas.

Having regard to national policy to increase the quantum of electricity produced from renewable sources, the rural character of the area, the dispersed settlement pattern, and the low number of residential properties that are likely to be significantly and adversely impacted, I consider that the overall visual impact of the development is acceptable.

Conclusion

No mitigation measures are required for noise and vibration during the operational stage of the development. The impacts during the construction phase will be short term and temporary and capable of mitigation. I am satisfied that potential shadow flicker effects would be effectively mitigated by the measures proposed as part of the

scheme. Visual impacts will be experienced particularly in close proximity to the site but in the majority of cases these are not considered to be significant.

I am therefore satisfied that the proposed development would not result in significant effects on the amenity of properties in the vicinity to warrant refusal of the application.

10.0 Environmental Impact Assessment

10.1. Statutory Provisions

The European Union Directive 2014/52/EU, amending Directive 2011/92/EU, on the assessment of the effects of certain public and private projects on the environment, requires Member States to ensure that a competent authority carries out an appraisal of the environmental impacts of certain types of projects, as listed in the Directive, prior to development consent being given for the project. The EIA Directive was transposed into Irish law under the Planning and Development Regulations 2001 to 2018. Part 1 of Schedule 5 of the 2001 Regulations, includes a list of projects for which mandatory EIA is required. Part 2 of Schedule 5 provides a list of projects where, if specified thresholds are exceeded, an EIA is required.

The proposed development falls within the definition of a project under the EIA Directive as amended by Directive 2014/52 and falls within the scope of Class 3 (j) of Part 2 of the Fifth Schedule of the Planning and Development Regulations 2001, as amended:

Energy Industry

(j) 'Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output of greater than 5 megawatts'

The proposed development with a total of 12 no. turbines with an estimated output of 55 megawatts exceeds these thresholds and is therefore subject to mandatory EIA.

The EIAR submitted with the application consists of four volumes.

- Volume 1: Non-Technical Summary
- Volume 2: Main Text
- Volume 3: Appendices

- Volume 4: Photomontages

10.2. Compliance with legislation

The impact of the proposed development is addressed under all relevant headings with respect to the environmental factors listed in Article 3(1) of the 2014 Directive, which include:

(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

(e) the interaction between the factors referred to in points (a) to (d).

The environmental factors listed in Article 3(1) of the Directive are discussed in Chapter 5 to Chapter 15 of the EIAR. Chapter 1 & 2 include an introduction and description of the proposed development. Chapter 3 describes the civil engineering works, and the alternatives considered by the applicant are discussed in Chapter 4. Interactions are set out in Chapter 16 and Chapter 17 contains a schedule of environmental mitigation.

Article 3(2) of the Directive requires the consideration of effects deriving from the vulnerability of the projects to risks of major accidents and/or disasters that are relevant to the project concerned. These are discussed in section 2.12 of the EIAR and includes the potential for 'landslides' which is considered and assessed in a peat stability assessment report contained in Appendix 9-1 of the EIAR. The potential for 'flooding' is considered in Chapter 8 (Water).

The EIAR complies with Article 5 of the Directive and Schedule 6 of the Planning and Development Regulations 2001, as amended. It provides a comprehensive description of the project comprising information on the site, design, size and other relevant features of the project (Chapter 2). It describes the likely significant effects of the project on the relevant environmental media (Chapters 5 -15) and provides a description of the measures envisaged in order to avoid, prevent or reduce and, if possible offset likely significant effects on the environment.

The Directive requires that the description of likely significant effects should also include an assessment of cumulative impacts that may arise from the proposed development in combination with other plans or projects. Section 2.11 of the EIAR sets out the methodology for the cumulative assessment and details of other projects considered. Cumulative effects are also considered under the various environmental factors in the individual chapters of the EIAR.

The EIAR includes a Non-Technical Summary of the information referred to in Article 5 (a) to (d) and additional information specified in Annex IV. It provides an adequate description of the proposed development and the measures used to identify and assess the significant effects on the environment. The Non-Technical Summary is concise and comprehensive and is written in a language that can easily be understood by the public.

In compliance with the provisions of Article 5(3), the EIAR tabulates the inputs and qualifications of the study team and contributors to the EIAR under Section 1.8. I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality.

Details of the consultations entered into by the applicant as part of the application are set out in Section 1.7 and Appendix 1.4 of the EIAR and have been addressed above under the Planning Assessment.

I note that no technical difficulties were encountered in the preparation of the EIAR (Section 1.19).

I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality, and that information provided in the EIAR and supplementary information provided by the applicant, 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. I am satisfied that the information provided is reasonable and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the project on the environment, taking into account current knowledge and methods of assessment.

10.3. **Alternatives**

Under the provisions of Article 5(1)(d) of the 2014 Directive it is a requirement that an EIAR contain:

"(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".

Chapter 4 of the EIAR addresses the matter of alternatives in terms of alternative locations, design/layout, alternative turbines, alternative grid connections and construction methodology.

Regarding alternative locations, the initial site selection process focused on the designated 'Strategic Site Search Zones' as indicated in the Kerry Renewable Energy Strategy. Following the exclusion of designated areas, state lands and housing set-backs, the site selection process identified a lack of suitable sites to establish a wind farm project in these areas. The applicant then focussed on the areas identified 'Open for Consideration' and cross referenced these against the wind resource and proximity to the national grid. This process resulted in the identification of 4 no. sites which were subjected to an analysis of physical and environmental constraints.

The development site emerged as the most viable from a technical, financial and planning perspective, while imposing the least impact on the receiving environment (Table 4-2 of the EIAR). The site had the advantage of being located in a flat rural landscape well removed from scenic and high tourism areas, in an area not considered to pose a significant risk to bird species and with the advantage of having access to the national grid via the 110kV line that runs adjacent to the site.

Alterative layouts and turbine numbers were then examined to find the optimum design solution for the site with the least environmental impact. The preferred layout (iteration No.9) emerged following the identification of constraints including set back from houses, peat depths, avoidance of turbary etc) and environmental sensitivities (noise, shadow flicker, ornithology, archaeology, landscape and visual effects, public roads and access, soils geology and peat). The various iterations to the layout and turbine numbers are documented in the EIAR. The development as proposed is the

preferred option as it results in the least effects on resources and receptors while meeting the projects objectives of a large-scale renewable energy development (Table 4-14).

The EIAR also considered two alternative wind turbine configurations and a comparison of environmental effects (Table 4-15). A turbine with a larger rotor diameter (68m) was chosen on the basis of the additional renewable energy provided for export to the national grid and would not increase environmental impacts such that a significant effect would result.

Two alternative grid connections options were considered and assessed. The preferred option is for an underground cable connection from the wind farm substation to the existing transmission line. This is considered the optimum technical solution, due its short distance, minimal construction works and its technical electrical solution. The alternative would involve laying an underground able along the road network to connect to the permitted Drombeg/Tullamore Solar Project located c 5.5km south of the proposed windfarm. This would entail road closures, traffic disruptions, construction noise, removal of over burden which would be avoided by Option No 1. The exact connection method will be a matter for Eirgrid but for the purposes of EIAR, both options are assessed.

The EIAR also considers alternative construction methodologies. Regarding the internal access roads, the primary objective is to utilise the existing tracks where possible to minimise environmental impacts. Alternatives for the excavations for the turbine bases and hardstand areas (dig and replace v's sheet piling) will depend on peat depths.

I consider that the matter of examination of alternatives has been satisfactorily addressed in the EIAR. I consider that the level of detail is reasonable and commensurate with the project. I accept that the process of site selection, consideration of alternative layouts, grid connections and turbine configuration followed a comprehensive and transparent process. It indicates how the proposed development evolved and how it was adjusted to take into consideration environmental effects. I am satisfied that the process is robust and that the requirements of the Directive are fully complied with.

10.4. Likely Significant Effect on the Environment

This section of the EIA identifies, describes and assesses the potential direct, indirect and cumulative effects of the project under each of the environmental factors referred to in Article 3(1) of the Directive. The assessment follows the headings used in the EIAR which are as follows:

- Population and Human Health
- Biodiversity
- Ornithology
- Water
- Land & Soil
- Air & Climate
- Noise & Vibration
- Shadow Flicker
- Landscape and Visual
- Cultural Heritage
- Material Assets

10.5. Population and Human Health

EIAR summary

Chapter 5 of the EIAR considers the potential effects of the development on population and human health in the context of population/settlement, economic activity, employment, land-use, amenities/tourism and health/safety.

The site lies in a rural area and the nearest urban centres are Listowel town to the south and the villages of Ballylongford to the north and Moyvane to the east. The site extends across a number of townlands and the area is moderately populated. Settlement patterns consist of one-off housing and ribbon development along the local road network. The greatest density of settlement occurs along the local road network to the north west and south west of the development site (Fig 5-4). Population trends for the period 2011-2016 indicates that while some ED's

experienced increases in population numbers, most areas experienced a population decline.

The EIAR also provides employment statistics (Table 5-9) and a review of commuter data flow which suggests that the majority of people (80%) work outside of the area in which they live. This suggests that the largest urban centres are the principal employment centres in the area.

The lands to be developed are predominantly peat bogs and a significant amount of small peat extraction has taken place across the site. While the bog roads are used as amenity walking routes by some residents, there are no defined recreational land-uses within or close to the site. The predominant land use in the immediate environs of the site is agriculture, with some areas forested for commercial purposes. Wind energy is also another land-use in the wider area and there are currently a number of operational wind farms to the north-east and north-west of the site.

There are many tourism, recreational amenities and walking routes in the wider locality.

Likely Significant Effects

The EIAR considers the potential for likely significant effects in terms of population and settlement, economic activity and employment, land use, tourism and amenities, visual effects, health and safety and health and well-being.

Population and Settlement

The proposed development is unlikely to have a significant effect on population. There will be no loss of residential dwellings and therefore no displacement of the existing population. There will be no mass in-migration and the proposed development is not likely to result in depopulation of the local area. Overall, the proposed development is expected to have a neutral impact on population and settlement.

Employment/Economic Activity

Additional employment (60-80 jobs) will be created during the construction phase, and it is anticipated that the majority of workers will be from the local region. The construction stage is anticipated to last for 18 months resulting in a short-term positive effect. There will also be knock-on secondary effects for local businesses, suppliers of materials, catering etc, which will have beneficial effects for the local

economy. During the operational stage there would be benefits to the local community associated with the provision of a community benefit fund, which will assist local communities to enhance and/or maintain a range of amenities and services for residents in the local towns, villages and surrounding hinterland. It is anticipated that employment for c 20 persons will be created during the operational stage, but these may not all be locally based.

Land-use

During the construction stage there is likely to be a moderate negative impact on land use and access within the development lands. Impacts would be temporary and not significant. Access through the bog will remain open and access to turbary will continue, except in areas where active construction is taking place. The areas of construction (turbines, hardstands, blade set down areas etc) will be fenced off for the duration of the construction period for health and safety purposes. Access to the existing bog road infrastructure will be restricted until upgrades are complete (3 months) and will be scheduled not to interfere with access during peat harvesting season. Access to turbary owners may also be restricted at times of heavy activity such as turbine delivery or concrete pouring.

Once operational the wind farm will have full and improved access to all users. There will be no severance, loss of rights of way or amenities as a result of the proposed development. Conventional peat extraction activities on remaining turbary plots will resume and continue to take place at the site independent of the proposed development. All existing land uses on neighbouring lands can co-exist with the development and therefore the proposed development would have a neutral impact on land-uses.

During decommissioning there is likely to be temporary disruptions to land-uses and access. Impacts would be temporary and not significant.

Tourism and amenities

There are no tourist attractions associated with the proposed development site. It is not used as a recreation site and there are no public facilities, or any direct tourism attractions or services close to the site. The location of the wind farm at a distance from major tourist attractions will ensure that tourism and amenities are not directly impacted during construction and while the operational windfarm development may be visible, it will not result in significant adverse impacts on these amenities.

There is potential for the development to impact on the visual amenity of the area, which is assessed in greater detail in Chapter 13 of the EIAR. The overall conclusion is that while a visual impact is unavoidable, the extent of intrusion will vary in degree and significance according to viewing distance. The greatest potential for significant effects will arise close to the site. No significant visual effects result from any designated viewpoint/scenic routes or designated landscapes within the study area, including in Co Clare along the Shannon Estuary.

Health and Safety

While there is the potential for construction related hazards, serious risks to human health and safety are not envisaged. The site will be managed in accordance with safety and health regulations and guidelines, and a Health and Safety Plan will be prepared in advance of construction to deal with safety and health related issues.

During the operational stage potential electrical risks are associated with turbine transformers, switches and cabling. These will meet health and safety regulations relating to high voltages and will be enclosed in the sub-station with secure fencing. Access to the turbines and sub-station will be controlled during operation to ensure the safety of the public.

Blades can potentially fail through damage in severe weather but this is extremely rare. Modern wind turbines incorporate a fail-safe mechanism that comes into play during extreme weather conditions so that the risk from the operational stages of the wind farm is negligible. The separation distance of turbines from public roads and residences are beyond fall-over distances that would present a risk of significant accidents.

Health and Well Being

The construction phase has the potential to impact on human health and well-being associated with dust, noise emissions and traffic nuisance. These are assessed in detail in other chapters of the EIAR and are discussed in more detail below. Subject to effective implementation of mitigation measures to reduce dust and noise emissions during construction, no significant impacts are anticipated. While construction traffic this is likely to cause disturbance and potential annoyance for local residents, the impacts will be temporary and short-term.

The operational wind farm has the potential to impact on the human environment arising from shadow flicker, noise and visual impacts. Subject to the implementation of a curtailment strategy no significant effects are likely to arise from shadow flicker. The result of the noise assessment indicates that the operational wind farm can meet the noise criteria set out in the 2006 Wind energy Guidelines, both as a standalone development and cumulatively with the existing operational and permitted developments in the area at the nearest noise sensitive receptors. As noted above, the greatest visual effects will be experienced close to the site. These impacts cannot be mitigated. The proposed substation will be partially screened by an engineered soil berm which will be fully planted to provide visual screening and will also help to dampen and supress noise emissions from noise generating equipment.

The project will have a net benefit on human health in the long-term by contributing to the production of clean renewable energy.

Cumulative Effects

Construction activities may have a cumulative effect on the receiving environment, only if other proposals are constructed in close proximity and at the same time as other projects. A list of planned/permitted developments assessed in the EIAR for cumulative impacts is provided in Chapter 2 of the EIAR and there is limited potential during construction for cumulative noise and air quality effects with these projects. Any cumulative traffic effects/impacts on the local road networks due to construction would be temporary and short-term and consultation will be undertaken with Kerry Co Council and local residents to ensure that cumulative effects with other projects would be minimised. Overall, it is considered unlikely that any cumulative effects with other projects during construction would result in long term significant impacts on Population and Human Health.

Potential cumulative effects associated with noise, shadow flicker and visual effects during the operational stage are assessed in the individual chapters of the EIAR and no significant cumulative negative effects are predicted.

Mitigation

The potential for significant impacts on the human environment will principally arise during the construction stage from traffic, noise and dust and during the operational stage from noise, shadow flicker and visual impact. Mitigation is addressed in the

respective chapters of the EIAR and is discussed in more detail in following sections of this report.

EIAR Conclusion

The overall conclusion reached in the EIAR is that subject to appropriate mitigation the proposed development, by itself or cumulatively with any other development, will not result in any significant impacts on population and human health during either the construction or operational stages of the development.

The development will produce renewable energy thereby avoiding the risk of air pollution and impacts on human health.

Assessment

The main issues raised in the submissions relating to impacts on population and human health are shadow flicker, noise, exposure to electromagnetic fields, depopulation of the local area, devaluation of property and impacts on local amenities.

While there is no scientific evidence that the operation of a windfarm would result in negative health outcomes, it is recognised that there is potential for increased annoyance associated with shadow flicker and noise.

Both the planning authority and the observers raised the issue of shadow flicker. The planning authority consider that the exposure of 25 no. properties to shadow flicker is unacceptable and the observers have concerns about health effects.

The potential for shadow flicker is considered and assessed in Chapter 12 of the EIAR. In line with best practice the scope of the assessment extends to a distance of 10 times the maximum rotor diameter. Shadow flicker was calculated for the proposed turbines using WindFarm software and for a worst-case scenario. There are 118 no. properties within the 10-rotor diameter study area (Fig 12-2). The results of the modelling are shown in Table 12-2, and it identifies 25 no. properties that would be impacted in a worst-case scenario. This model makes various assumptions such as a bare earth scenario with no screening by vegetation, that the turbines will be rotating all the time, the sun will always be shining during daylight hours, with no cloud cover etc, which will not be the case.

When sunshine hours are taken into account the shadow flicker, if unmitigated reduced to well below the threshold of 30 hours per year threshold at all locations

except four (H1, H92 H256, and H382). This is considered a very conservative overestimate as it assumes that the wind will be blowing all the time, the sun will be shining during daylight hours and that there will be no obscuring vegetation etc.

The applicant has committed to a curtailment strategy for all turbines that cause exceedances in the shadow flicker thresholds at a distance of up to 10 rotor diameters from the proposed turbines. These measures are standard best practice measures on wind farm sites and subject to appropriate implementation and ongoing monitoring, I am satisfied that shadow flicker will not result in annoyance or unacceptable negative impacts on the properties likely to be affected.

Following mitigation, no residual impacts and no cumulative effects with other wind farm developments are predicted.

Noise is considered in more detail below under Section 10.11 of this report It has been determined that the proposed windfarm would be capable of operating within the recommended noise limit criteria in the current Wind Energy Guidelines and residential properties will not be adversely affected.

Concerns have also been expressed about exposure to electromagnetic fields Significant research has been carried out, and published opinion consistently finds, that exposure to EMF does not present a health risk if exposure remains below the recommended limits. The electricity cables and substation will be operated so that they comply with the international guidelines for Extremely Low Frequency (ELF) and Electromagnetic Field Radiation set by the International Commission on Non-Ionising Radiation Protection (ICNIRP) and will not pose a risk to human health.

There are concerns raised that the proposed development in conjunction with other windfarms would result in depopulation of the local area, which would impact on the survival and operation of local clubs and facilities. The applicant correctly states that the reasons for living/leaving a particular area are many and varied and it may well be that people would be deterred by the windfarm in a similar way as they would be by a quarry, factory, or intensive agricultural unit.

I note from the population statistics provided in the EIAR (Table 5-7) that the majority of the ED's in the wider area have experienced population decline during the 2011-2016 intercensal period. The decline in rural areas is not confined to this part of Co. Kerry with similar trends experienced in rural populations across the State. The reasons for this decline are complex and I am not aware of any published research

that suggests that the presence of a windfarm is likely to be a significant contributor, or a deterrent which makes an area less attractive as a place to live.

The issue of property devaluation is of concern to some of the observers. Details of research to support their position is provided and it is contended that the applicant's rebuttal, which refers to research around the world that concludes that wind turbines do not adversely affect property values, is selective to support its own case.

This is a recurring issue in wind farm applications and there is research which supports both sides of the argument. I accept that the factors impacting on property value are many and varied and I am not persuaded that it can be conclusively determined that windfarms impact negatively on property values.

It is suggested in the submissions that local amenities will be impacted by the development. I note that parts of the bog are used by local walkers but there are no defined walking trails/ amenity routes within the development site. Some of the existing tracks will be upgraded/widened and new routes provided, which will result in curtailment of access during the works. However, these impacts are temporary, short lived and not significant. Following the completion of the works the site will remain open to local walkers.

Conclusion

I have considered all the submissions made in relation to population and human health and I am satisfied that they have been appropriately addressed in terms of the application. I consider that the information provided is sufficient to allow the impact of the proposed development to be fully assessed.

The proposed development will occupy a limited footprint within a large cut over bog site. I accept that the impacts that will arise during construction will be temporary and capable of effective mitigation. Following the completion of the development there will no significant adverse impacts on the amenities of the area and there will be no restrictions on access, including for those with turbary rights. I do not consider that there is compelling evidence that the development of the wind farm would result in depopulation of the area or impact on property values. Due to the separation distance to tourist attractions and amenities and scenic viewpoints no significant impacts are likely to arise.

I accept therefore that the proposed development will not result in significant adverse impacts on population and human health during the construction and operational phases of the proposed development. I am satisfied that the impacts identified would be avoided, managed or mitigated by the measures proposed and through suitable conditions.

I am, therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impact on population and human health. I accept that the visual impact on a small number of properties close to the site will be significant and adverse and these impacts are not capable of mitigation. This matter is considered in more detail below in Section 10.12 of this report.

10.6. Biodiversity

EIAR Summary

Chapter 6 of the EIAR assesses the potential impacts of the proposed development on biodiversity. It is supported by 7 no. appendices included in Volume 3 of the EIAR;

- Appendix 2-1: Construction and Environmental Management Plan
- Appendix 6-1: Evaluation Table (NRA 9a)
- Appendix 6-2: Bat Report (2019)
- Appendix 6-3: Bat Report (2020)
- Appendix 6-4: Fisheries Assessment Report
- Appendix 6-5: List of Species
- Appendix 6-6: Figures

The study area extends to a 15km radius of the proposed development site, considered to be the potential zone of influence of the proposal. Details on the existing environment were obtained from a desk study (which included a review of available ecological mapping, data sets, ortho-photography) coupled with a range of field surveys which included multidisciplinary ecological surveys and targeted surveys for habitats, mammals, invasive species, amphibians/reptiles and invertebrates. Aquatic surveys were also conducted.

Desk top study

The information on the receiving environment provided by the desk top study indicates the Natura 2000 sites that occur within 15km of the site, but as the potential for significant effects is considered in detail in the NIS, the designated sites are not considered further in this chapter of the EIAR.

There is one Important Bird and Biodiversity Area (IBA), namely the Shannon and Fergus Estuaries IBA within 15km of the site, which is encompassed within the River Shannon and River Fergus SPA (Site code: 004077). This is identified as one of the most important sites in Ireland for wintering and migrating waterfowl supporting species of international and national importance. The section closest to the development site is c 2.7 linear kilometres to the north and stretches from Ballylongford Bay to Kilconly Point and incorporates Bunaclugga Bay. It is c 5.8km downstream of the proposed development.

There are no Ramsar sites within 15km of the proposed development. Sites of National Importance (NHA/pNHA's) within 15 km are identified in Table 6-13. The closest is Bunnaruddee Bog NHA (001352) c 0.9 km to the south east of the site, comprising a raised bog.

Records of protected faunal species obtained from the National Biodiversity Data Centre (NBCD) for the 10km grid squares overlapping the site are listed in Table 6-14. Records of invasive alien species (faunal and floral) from the NBCD are provided in Table 6-16 and 6-17 respectively. The Bat Habitat Suitability Index (BHSI) available on the NBDC online mapper was used to determine the probable value of the area within and surrounding the proposed wind farm site to bat species. The ratings indicate that the site and its surrounds are of relatively low value to bats.

EPA biological water quality ratings available for the nearest stations on watercourses draining the proposed development site are listed in Table 6-21. While there is a degree of variation in water quality, the general trend is one of improvement in biological water quality.

Terrestrial Surveys

The information on the receiving information obtained from the terrestrial surveys indicates that the main habitat on the site comprises cutover bog, with small areas of

improved grassland/wet grassland to the east and west and conifer plantation on the northern fringes (Fig 6-3). These disturbed areas of cutover bog and the modified character of other habitats (commercial forestry) results in generally impoverished habitats for faunal species. The surveys did not record evidence of any of the species that would normally be found in similar locations (badger, rabbit, hare or otter).

Bat detectors were used to record bats using the site in 2019 (4 no. sampling points) and 2020 (10 no. sampling points). Details of the species recorded during the surveys are provided in Table 6-23 to 6-35 of the EIAR. The bat survey reports, results and impact assessments are provided in Appendix 6-2 and Appendix 6-3 (Volume 3).

An Initial Site Risk Assessment compiled in accordance with the SNH, 2019 [2], indicates that the proposed wind farm site is 'Low' risk for bats. This is attributed to lack of roost features, the isolated nature of the site, which is not connected to the wider landscape by linear features and low-quality foraging habitat. It is concluded that the site is unlikely to provide significant foraging, roosting or breeding habitats for bat species and while a regular pattern of bat activity is foreseeable, levels of activity are unlikely to be significant.

Common frog and frog spawn was observed at several locations in the networks of drains within the site. Invertebrates were only encountered rarely.

No protected flora species were recorded during the site surveys. Two species of invasive alien species were recoded (Japanese Knotweed and Giant Rhubarb) in three locations, with one occurring within the development boundary (Japanese Knotweed proximate to the location of T12).

Aquatic Surveys

Information on the water environment was compiled from aquatic surveys which included physicochemical sampling at four locations outside the site (Fig 6-1) and sampling of benthic macro invertebrates at five locations (Fig 6-2). The physicochemical water quality results are set out at Table 6-36. Conductivity values reflect the peaty nature of the study area. All Dissolved Oxygen concentrations are within the range expected of water of good quality with respect to oxygenation and

[2] Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation (SNH, 2019)

the pH range indicates that the watercourses draining the proposed development site are suitable for aquatic life with respect to pH.

From the sampling of benthic macro invertebrates undertaken on watercourses draining the site (Fig 6-2), the water courses are noted to be highly modified and the substrates at all five locations were silted to a degree consistent with unsatisfactory water quality. Algae growth which is indicative of enrichment was recorded at all locations. The biological water quality results for 2020 are given in Table 6-37 and rated 'Poor' to 'Moderate' (WFD status)

Regarding fish habitats and fish, the biological water quality of the main watercourses draining the site is noted to be unsatisfactory and marginal/suboptimal for salmonids. While the Galey and Ballyline rivers are likely to support populations of salmonids, the 1st order streams draining the site are considered unsuitable for spawning and the early life stages of salmon. The Tarmon stream to the east is also evaluated as unsuitable as a spawning and nursery area for salmonids. These streams have also unsuitable lamprey nursery habitat. A sluice gate has been installed on the Tullamore Stream along the southern boundary of the site c 100m upstream of the River Galey confluence which would prevent any upstream fish migration.

While the River Galey is a suitable spawning, nursery and holding area for salmonids, the river habitat quality of the channel has been drastically reduced by modifications. It is considered that most salmon in the river spawn upstream of the proposed development and its tributaries. The Ballylongford River is best suited to the early stages of salmonids, with few pools of adequate depth to hold adult salmon during low water.

The conditions in the Ballylongford and Galey Rivers are sufficient to support a population of brook lamprey and possible migratory lamprey (river and sea). The occurrence of lampreys in the watercourses nearer and within the proposed development site is doubtful as spawning areas are a limiting factor.

Most of the invertebrates recorded during the biological sampling carried out on the watercourses draining the site were pollution tolerant indicators.

The habitats, flora, fauna and other ecological features/resources identified in the desk study/field surveys were evaluated on their local, national and international importance. The evaluation criteria described in the EIAR (Section 6.1.5.1) was used

to identify those that are Important Ecological Features (IEF). The results of the evaluation (habitats/species) and the rationale for selection of IEF are contained in Tables 6-39 to Table 6-41.

Likely significant effects during construction phase

The construction stage is likely to have the most significant effect on biodiversity. The main construction phase effects are identified as follows:

- habitat loss, disturbance and alteration effects associated with construction, tree felling, forestry replacement, side casting and stockpiling of material, installation of ducting.
- temporary disturbance and/or displacement of species
- pollution of drains/streams draining the site and downstream watercourses
- spread of invasive species.

The EIAR evaluates the potential for significant effects on the features identified as Important Ecological Features (IET), which are summarised as follows:

Sites of International Importance

The Shannon and Fergus Estuaries IBA is located c 6km downstream of the proposed development. There is no potential for direct effects but ex-situ impacts, albeit limited, could arise due to an impairment of water quality from the stream draining the site. This could have the potential to result in indirect habitat loss and alteration impacts which could in turn result in indirect disturbance/displacement effects on bird species for which the site is selected due to a reduction in prey species. Mitigation measures to prevent ex-situ effects are described below.

Sites of National Importance

The site does not overlap with any NHA/pNHA selected as an IEF and there is no potential for direct effects on any site. The only site identified where in-situ water quality impacts could exert ex-situ effects is on the Ballylongford Bay pNHA, located c 6km downstream of the development site. It encompasses a brackish lagoon and areas of reed beds. Adverse water quality could potentially result in indirect habitat loss, in the absence of mitigation.

Impacts to Habitats

There will be loss of habitat associated with construction of the various elements of the windfarm, construction of internal roads, substation, peat deposition areas and underground cabling. Most infrastructure is situated in cutover bog, and there will be some minor loss of hedgerow and scrub. There is also the risk of peat failure and landslides and the resulting potential impacts on habitats and species, particularly downstream aquatic IEF's. The proposed road layout and other infrastructure has been selected on the basis of the field investigations, using criteria such as peat depth and gradients to minimise both the impact of peat slippage and impacts on higher value peat habitats.

Excavations to accommodate the turbine bases generates waste peat, introduces alkaline concrete and requires some drainage, as do the access tracks. There is potential for impacts on drainage patterns arising from the digging of trenches to accommodate cabling. Neither the stream within the site and the one adjacent to the south of the site will require crossing. Operations on the site such as movement of materials can disturb local ecosystems. There is potential for dust generation from activities on the site which can travel into waterways and impact on sensitive receptors.

Impacts to Terrestrial Fauna

With regard to bats, construction activities on the site will be restricted to daylight hours and direct disturbance or displacement effects are not expected. It is possible that the loss of habitat, which would be mainly confined to the area of cutover bog would have an effect on bat species selected as IEF. However, due to the homogeneity of the site, the low area of habitat loss and low ecological value of the habitats to bats, and the availability of abundant similar equivalent habitat in the surrounding area, the impact is assessed as neutral, imperceptible and permanent.

With regard to other mammals, no badger activity was observed on the site and no setts were recorded. It is possible that these species use the site occasionally and increased activity may result in disturbance/displacement effects during the construction stage. These activities will be limited to daylight hours and due to the fact that the numbers habitually present will be low, the impacts associated with displacement/disturbance are likely to be inconsequential.

No otter was recorded and no evidence of any activity was observed. Neither habitat loss or alteration impacts or displacement/disturbance effects as a result of

increased activity at the site during the construction stage are likely. There is potential for fluvial habitats downstream which are considered suitable for otter to be impacted, associated with reduced water quality and a reduction in available prey. Given the localised and temporary nature of the works and extent of suitable habitat in watercourses downstream, it is considered that impacts will be limited.

Regarding amphibians and reptiles, Common Frog occurs in the study area, with common lizard also likely. The loss and alteration of peatland habitats would result in a loss of foraging habitat for this group.

Regarding invertebrates, while not recorded at the development site, NBDC records indicate the presence of two Marsh fritillary butterflies in a location c 30m north of T8. While the food plant for this species (Devil's bit scabious) was recorded in a number of locations, these were not considered suitable to support breeding by the species due to the lack of suitable conditions (size of the stands, habitat structure and absence of grazing or sward management etc). Significant effects on the species is considered unlikely at a local level.

Impacts to Aquatic fauna

There is some potential for drains to act as pollutant pathways between the proposed development site and the rivers downstream. A reduction in water quality due to pollutants (silt, chemicals, hydrocarbons) entering the Galey or the Ballyline rivers as a result of construction could potentially impact on habitats required by aquatic species for the various stages of their life cycle including salmon and lamprey species. All of the aquatic species identified as IEF are dependent on good water quality.

Likely significant effects during operational phase

The operational stage of the development will not have the potential to generate impacts of similar magnitude to the construction stage. There may be some excavation associated with drainage, road/cable and turbine maintenance, but this will be small scale. Some erosion of soil will continue into the operational stage but will be reduced as vegetation becomes established. The potential for ex-situ impacts on designated international and national sites arising from a deterioration in water quality is significantly reduced.

Regarding operational impacts on habitats, the permanent infrastructure associated with the windfarm has the potential to impact on surface water and groundwater flow patterns, peat subsidence, sediment release and chemical pollution. Changes to the blanket peat can lead to changes in the vegetation, habitats and biodiversity. However, the peat mass on the site has been significantly altered by peat harvesting and by the existing network of drains which have lowered the water table significantly throughout the site. As a result, the operation of the proposed development is unlikely to result in significant effects on peat habitats beyond localised effects.

Notwithstanding the low level of activity recorded for all species, foraging bats using the site may be impacted by mortality due to collision, particularly those that fly at rotor swept height (Leisler' bat) and it is therefore concluded that long-term, significant, negative effects on bat species are likely at a local level.

No significant impacts are predicted for other mammals, amphibians/reptiles and invertebrates, that may have been temporarily displaced during the construction phase. These species would continue to utilise the habitats within and adjacent to the site within a short period of time. Similarly, following construction and the reduction in potential water quality impacts, aquatic species, which may have been temporarily affected due to construction activity, would continue to use the aquatic habitats downstream of the site.

Likely significant effects during decommissioning phase

It is anticipated that following decommissioning, the turbine bases will remain in place and be remediated to match the existing landscape. Turbine elements will be removed and reused/recycled. It is anticipated that the underground cables connecting the turbines to the substation will be cut back and left underground. Access roads will be left in place for use by landowners and the new substation will remain in place. A decommissioning plan will be agreed with the local authority.

Cumulative Effects

Cumulative impacts are considered in Section 6.7.4. The overall conclusion is that the potential for cumulative effects as a result of synergies between the proposed development and these activities, pressures, projects and plans (Table 6-68) is not likely to be significant.

Mitigation

The construction stage has the potential to cause temporary adverse effects on the local ecology. The worst-case scenario is identified as a significant ingress of sediment to the Galey or the Ballyline rivers or a small or medium scale spillage of pollutants during the construction stage The EIAR lists a range of mitigation measures to reduce potential impacts on local ecology. These will be incorporated into the project design in the Construction and Environmental Management Plan (CEMP). An Outline CEMP is included in Appendix 2-1 of the EIAR. A Project Ecologist will be appointed for the duration of the construction phase to ensure all mitigation measures outlined are fully implemented.

The CEMP will include standard best practice site management controls in respect of the temporary construction compounds, soil stripping, excavation works, dewatering, storage/stockpiles, refuelling on site, materials handling, fuel/oils storage, concrete management and road maintenance/cleaning.

Standard water quality protection measures will be implemented to mitigate potential impacts on watercourses and downstream environments. This includes the design of the drainage system, refuelling in bunded areas, appropriate management of concrete/cementitious material, management of waste oils/hydraulic fluids and measures to deal with accidental spillages. These measures are discussed in more detail below in Section 10.8 (Water).

To mitigate impacts on bats associated with collision, it is proposed to create a buffer of 50m between the turbine blade sweep and adjacent woodland in accordance with SNH (2019). Felling of forestry adjacent to T1 would be required to minimise impacts to foraging bats. The buffer area will require management to ensure that it does not develop into the types of habitats that support prey sources for bats. Any lighting introduced to the site would follows established guidelines to mitigate impacts on bats.

During the operational stage, the level of activity will be significantly reduced and there will be no particular risk of sediment runoff. The retention of the drainage system will ensure that run-off continues to be attenuated and dispersed across existing vegetation before reaching downstream watercourses. During decommissioning similar measures to protect water quality will be implemented to those during construction.

Regarding residual impacts, it is considered that the receiving environment has the capacity to accommodate the proposed development without significant effects on biodiversity. It is considered that potential effects on ecological receptors from each phase of the would be avoided, reduced and mitigated sufficiently to ensure that no likely significant effects remain.

EIAR Conclusion

Provided the proposed windfarm development is constructed and operated with the design, best practice and mitigation stipulated, significant effects on ecology are not anticipated. The implementation of the mitigation measures will ensure that no significant ecological impacts either alone or in combination with other plans or projects will arise from the project.

Assessment

The planning authority raised issues with respect to habitat classification stating that Shronowen Bog is a remnant raised bog and not a lowland blanket bog as described. It is also contended that the habitat mapping should be extended beyond the site boundaries to encompass areas of the adjoining bog which could be impacted by the proposal.

The DAU considers that there is insufficient information in the EIAR to assess the impact on ribbonworth, a plant species which is recorded in Shronowen Bog and is listed in the Flora Protection Order 2015.

The observers refer to the inadequacy of the site surveys and the failure to identify mammals and other fauna that would be present on the site. Issues have also been raised regarding impacts on Bunnaruddee Bog NHA (Site code: 001352).

The habitats on the site are stated to be classified according to Fossitt[3]. It is the standard scheme for describing habitats in Ireland. The cutover bog PB4 classification applies to situations where part of the original mass of peat has been removed through turf cutting or other forms of peat extraction. Areas of bog that are actively being worked are included in this category as are areas of abandoned or exhausted cutover, regardless of whether the bog is raised or lowland. There is evidence of significant peat extraction over the majority of the windfarm site and it would appear that the habitat is therefore correctly classified.

[3] A Guide to Habitats in Irelands, Julie A. Fossitt, October 2000.

However, it is widely accepted that this habitat classification has limitations, particularly for peatlands as some habitats such as cutover bog are highly variable, as reflected in the description in Fossit (2000):

'Cutover bog is a variable habitat, or complex of habitats, that can include mosaics of bare peat and revegetated areas where woodland, scrub, heath, fen and flush or grassland communities. The nature of the recolonising depends on numerous factors including the frequency and extent of disturbance, hydrology, the depth of peat remaining and the nature of the peat and the underlying substratum'.

Due to the potential diversity of the recolonising vegetation, the presence of habitats of high conservation value are subsequently not readily identifiable when using Fossit (2000), except where '*the regenerating habitats cover a sizeable area and can easily be fitted elsewhere in the classification*'.

A more comprehensive, specialist classification scheme of cutover bog has been published by the NPWS in Irish Wildlife Manual No 128. This was published in 2020 and post dated the surveys associated with the proposed development. However, Fossit remains the standard with the Irish Wildlife Manual a recommended approach.

While the habitat mapping does not extend beyond the boundary of the application site, this is a large homogenous area of cutover bog which extends beyond the boundaries of the site to the north and south. Habitats outside the site consist of improved grassland with blocks of conifer plantation. The development will be confined within the boundaries of the site and subject to the mitigation measures proposed to ensure that the existing surface water regime is not compromised, to attenuate flooding associated with storm events and to protect water quality, it is not envisaged that the proposed development will impact on habitats outside the development site.

The planning authority also refer to the protected flora survey methodology and contend that it should have extended to Annex IV and Annex V of the Habitats Directive which includes Sphagnum mosses and Cladonia lichens. Annex IV (Animal and plant species in need of strict protection) of the Habitats Directive does not include any plant species that would be expected on this type of habitat that would require strict protection. Sphagnum mosses and Cladonia lichens are listed on Annex V but do not include protected species. The annex relates to *taking in the wild* (which is not considered a risk for either group or species) rather it is the exploitation

of peatlands that is the main threat to these plant species but this Annex does not relate to regulated activities such as peat extraction that is ongoing on the site.

In response to the DAU's concerns regarding potential impacts on Ribbonworth, the applicant's rebuttal notes that the plant species was recorded on site in 2009, and vegetation in the area has changed substantially over the intervening period. A site visit was completed by an ecologist on October 7th, 2021 and no evidence of the plant species was found.

I accept that it is possible that mammalian species may be present on the site, which may have not been recorded during the terrestrial surveys. Having regard to the limited footprint of the development relative to the overall size of the site and the abundance of similar habitat in the immediate area, I consider that it can be concluded that the proposed development is not likely to result in significant effects on species that use the site. The construction phase may cause disturbance to these species, but this will be temporary and short lived.

Bunnaruddee Bog NHA (Site code: 001352) lies c 0.9km east of the proposed windfarm. According to the NPWS site synopsis, the site consists of a Western Raised Bog, which has developed on a floodplain of the Galey River. It is described in the NPWS site synopsis as a site of considerable conservation significance comprising a raised bog, a rare habitat in the EU.

The proposed windfarm site and the bog share hydrological connections with the Shronowen River and the Galey River but from the flow directions and catchment areas on the EPA mapping they both drain to the southwest. Given the topography and flow directions and that the proposed windfarm is downstream I consider that significant effects on the NHA can be ruled out.

Conclusion

The development site is heavily modified and degraded due to turf cutting and drainage activities which have occurred over a prolonged period of time. This has resulted in the destruction of the natural bog habitat and the species it supports. The habitats present on the site are of low ecological value and unable to support an abundance of terrestrial fauna, including birds and bats.

Bat activity has been recorded on the site and species that fly at rotor swept height are at particular risk of collision. However, measures to mitigate impacts and protect

bats are incorporated into the proposal as discussed above. I note that DAU have requested that in the event of permission being granted for the development that a condition be attached requiring the monitoring of bat mortality on the site, which I consider reasonable.

The development avoids the most ecologically sensitive sites in the wider area and subject to the mitigation measures proposed, which are primarily associated with the protection of water quality, I accept that ex-situ impacts on these sites can be avoided.

I consider that the information provided in the planning application documentation is sufficient to allow the impacts of the proposed development to be fully assessed. I have considered all the submissions made in relation to biodiversity and I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise. I consider that the impacts identified would be avoided, managed or mitigated by the measures proposed and through suitable conditions. I am, therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impact on biodiversity in the area.

10.7. Ornithology

EIAR Summary

Chapter 7 of the EIAR assesses the potential for significant effects on avian receptors. It describes the methodology used to collect information on the site and its surrounds, the ornithological features within the Zone of Influence (15km) of the project and identifies features likely to be impacted by the development which are classified as Important Ecological Features (IEF).

The chapter is supported by Appendix 7-1 to Appendix 7-4 (Volume 3) which detail the results of the bird surveys carried out over the period between October 2018 and September 2020 as follows:

- Appendix 7-1: 2018/19 Winter Bird Survey Report
- Appendix 7-2: 2019 Breeding Bird Survey Report
- Appendix 7-3: 2019/20 Winter Bird Survey Report
- Appendix 7-4: 2020 Breeding Bird Survey Report

Background information on the baseline environment was gathered from desk top studies (using recognised data sets, publications, aerial photography and other sources of online aerial imagery) and from site surveys. The results of the desk top studies were used to identify birds which were considered likely to use the site. Of these, target species were identified which formed the focus of the bird surveys. The target species include those species afforded a higher level of legal protection, or which are considered to be more sensitive to wind farms by virtue of their behaviour. The primary and secondary target species are identified in Section 7.2.2 of the EIAR.

The site surveys were conducted on a monthly basis over 6-month periods during the winter and breeding periods. The main survey type was Vantage point (VP) surveys. Monthly vantage point surveys were carried out at three Vantage point (VP) locations (Fig 7-1) in accordance with the methodology set out in SNH (2017) guidance.[4] A survey of suitable waterbird sites in the surrounding hinterland was conducted and site-specific surveys were undertaken where evidence of waterbird usage existed.

IEF were considered to be the target species identified during the bird surveys at the site and designated sites for nature conservation, in particular those designated for their bird populations. They include target species that were recorded on more than one occasion during the two-year survey period and where suitable habitat occurred at the project site.

A Collision Risk Model was undertaken for two species of conservation interest, kestrel and hen harrier. In line with SNH (2000) guidance, the Band Collision Risk Model was used in the assessment. It estimates the risk of collision based on the activity levels and flight behaviour of these species, the number, layout and specifications of the proposed turbines and the biometrics of relevant species. The model inputs/outputs are presented in Table 7-17 to 7-22 of the EIAR.

Receiving Environment

The receiving environment is described in Section 7.3. It considers the development site and designated sites within the zone of influence of the proposed development. The site comprises cutover bog, which is substantially cutover or drained with a lowering of the water table and its ecological functioning substantially altered by turf

[4] Recommended bird survey methods to inform impact assessment of onshore wind farms' SNH (2017)

cutting. The vegetative communities that the bog supports are constrained by the nutrient poor conditions. The site is described as both topographically and ecologically relatively homogenous, a characteristic that inhibits species diversity not only in terms of its floristic communities but also in the variety of animal species routinely present.

In terms of designated sites, there are 2 no. SPA's and 10 No. SAC's within the Zone of Influence of the project (Table 7-5) in addition to NHA'/pNHA (Table 7-6). There are 2 no. IBA sites within 15km of the project boundary, namely the Shannon and Fergus Estuaries IBA and the Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle IBA. There is one I-WeBS (Irish Wetland Bird Survey) site within 15km of the proposed development, the Cashen River & Estuary I-WeBS site, Species present in national numbers include whooper swan, ringed plover, golden plover, lapwing, knot and sanderling (Table 7-8). The site is located c 12km west of the development site.

The EIAR notes that BirdWatch Ireland have developed a Bird Sensitivity Mapping Tool for wind energy projects, which provides a measured spatial indication of where protected birds are likely to be sensitive to wind energy developments. Fig 7-6 comprises a map showing bird sensitivity to wind energy at and in the environs of the project site. The site is located in an area where bird sensitivity to wind energy is 'low'. The only bird listed within the proposed wind farm site is barn owl. In information received from the NWPS Rare and Protected Species Records, there are records of barn owl to the south of the Galey River.

The EIAR also considers information on bird records and distribution from the breeding and wintering bird atlas (BirdWatch Ireland's, Bird Atlas 2007-2011). The study area intersects four hectads. Table 7-9 lists all the of the species previously recorded in these hectads which covers an area of 400km2 and includes a wide variety of habitats.

There is also reference to information gathered from the EIAR's for other windfarms in the area, including three existing windfarms (Tullahennel, Leanamore and Toberatoreen) close to the site and one permitted (Ballylongford). The majority of the birds recorded on these sites were passerines. The three main raptors recorded were hen harrier, kestrel and merlin. The data collected indicated that these species used the sites for foraging, with no evidence of breeding hen harrier observed on any

of the sites. Kestrel do most likely breed on the Leanamore site and close to the Ballylongford site.

The target and secondary species recorded during the field surveys results are detailed in Table 7-11. These included raptors (hen harrier, kestrel, sparrowhawk), swans (whooper swan) and waders (cormorant, curlew, snipe). Other non- target species recorded included buzzard, peregrine falcon, mallard, grey heron, little egrit, lesser black-backed gull and passerines during winter/breeding season (meadow pipit, robin, stonechat, skylark, house martin, mistle thrush, starling goldcrest, greenfinch, linnet and wheatear). No evidence of barn owl was observed during the site surveys.

Table 7-12 of the EIAR identifies and evaluates the Important Ecological Features (IEF) and presents the rationale for inclusion/exclusion as IEF. Table 7-13 provides details of the sensitivity of the bird species selected as IEF. It indicates one high sensitivity species (hen harrier), four medium sensitivity species (cormorant, little egret, peregrine and whooper swan and four low sensitivity species (kestrel, sparrowhawk, snipe and passerines.

Likely significant effects during construction

The main potential impacts on bird species likely to occur during construction relate to habitat loss disturbance/displacement effects and barrier effects.

There will be no direct habitat loss within any designated site arising from the proposed development. The nearest designated site for birds is the River Shannon and River Fergus Estuaries SPA. It lies c.2 km to the north of the site and accordingly there is no potential for direct disturbance of birds using the site. The main risk to bird populations within the designated sites during the construction phase arises indirectly from habitat loss or alteration (via a deterioration in water quality) or from direct/ indirect disturbance to species of conservation interest that might use the development site for commuting and foraging. This is considered in more detail in Section 11 of the report (Appropriate Assessment).

The proposed windfarm footprint will occupy and area of 27.5 ha within a site of 364ha. Direct habitat loss will therefore occur on c 7.5% of the site. This will mostly occur in cutover bog habitat with come loss of conifer habitat, improved grassland towards the periphery of the site and c 0.5 ha of scrub. Bird usage of the site is impacted by existing homogenous conditions on the site with poor plant species

diversity that lacks the variety and complexity required for high insect macro invertebrate productivity.

The loss of habitat will reduce the foraging area for birds using the site including passerines, birds of prey and other IEF's recorded on the site. Passerines are also prey items for birds of prey so a reduced abundance of these species may reduce sources of food for birds of prey. However, the habitat loss associated with the proposed development will be restricted to the wind farm development footprint, which is linear in nature and makes use of existing tracks where possible within the site. It will not therefore significantly impact on foraging or breeding bird species as there is an abundance of similar habitat within the site and the wider area. It is concluded that the construction of the underground proposed grid connection or alternative connection along existing roads will not result in significant habitat loss effects to IEF.

Displacement of birds may arise due to disturbance and visual intrusion, while barrier effects occur when the development creates a barrier to regular movements to and from breeding or foraging grounds. During construction disturbance may arise from noise emissions and general disturbance from workers, plant and machinery. It may also result in a moderate level of visual disturbance, with behavioural changes such as reduced feeding and species moving to another area close by. Disturbance is likely to discourage foraging in the vicinity of the proposed development and the impact will depend on the availability of alternative habitat.

The wind farm is linear in nature and occupies a limited area of the total site area. Therefore, much of the habitat will remain available for commuting and foraging birds of prey, though the available area is likely to be reduced due to displacement effects caused by construction activity.

Regarding hen harrier, it is stated that monitoring during construction on other windfarm site (Coollegrean Wind farm in north Kerry), the species was observed foraging and commuting in proximity to construction activities. Other studies (Madden & & Porter 2007) indicate that while flight activity around turbines reduced during construction, the activity of populations quickly returned to pre-construction levels once construction was complete. It is not considered that the either grid connection option will result in significant displacement effects to bird species selected as IEF.

Table 7-15 identifies and categorises the potential significance of the effects of habitat loss and displacement of each of the bird species selected as IEF during the 18-month construction stage. It is concluded that the significance of the impact is 'Low/Very Low' with no likely significant effects predicted at a local or county level for all any of the IEF species identified, with the exception of snipe, where the magnitude of impact is assessed as Medium due to displacement.

Significant effects during operational stage

The main impacts likely to arise during the operational phases of the development are associated with disturbance/displacement and barrier and collision effects.

With regard to SPA designated sites, the EIAR refers to the NIS report which concluded that subject to the implementation of the mitigation measures to control water quality within the site, the proposed development would not result in an adverse effect on the integrity of the River Shannon and River Fergus SPA. Many of the pNHA's within the zone of influence of the proposed development overlap with the SPA and it is therefore considered reasonable to conclude that the proposed development would not significantly affect these pNHA's. Other pNHA's would not be impacted due to distance and Bunnaruddee Bog NHA which is close to the site is not designated for bird species.

Displacement may be caused by the presence of the turbines themselves through visual intrusion, noise impacts or as a result of vehicle and personnel movements related to site maintenance. Barrier effects may be caused where the wind farm creates an obstacle to regular movements to and from breeding or foraging grounds.

Of the birds that use the site, the species identified of most conservation concern is hen harrier, which is an Annex 1 species and amber listed. There was no evidence of breeding hen harrier at or in close proximity to the site. The EIAR refers to various studies carried out on operational wind farms in Britain and in the United States which showed turbine avoidance by hen harrier and a drop off of flight activity within a wind farm site. It also refers to post construction surveys at operational wind farms in Co. Galway and Co. Limerick, which indicates that birds habituate and continue to forage within the site post construction.

Post construction surveys at the Slieve Aughties Mountains in Co Galway (71 turbines) indicated the continued use of the bogland to the east of the site by foraging hen harrier, with observations of birds passing between turbines or along

turbine lines, with no sudden or unusual movements that would indicate alarm or sudden hesitation. The monitoring indicated that the birds readily use the windfarm site and did not require a significant amount of time to habituate to operational turbines. Both transient and foraging birds were observed.

In the case of the Athea Wind Farm in Co. Limerick the operational phase monitoring results indicates that post construction usage of the wind farm site by foraging hen harrier is similar to usage during the years during construction.

Based on these observations and other studies, it is anticipated that hen harrier will continue to use the development site, with some degree of turbine avoidance shown by hunting birds. Given the intervening distance between turbines, the overall low density of birds using the site, it is not considered that the wind farm will result in a significant displacement or barrier effect during the expected 30-year operational phase for species identified as IEF.

It is noted in the EIAR that collision risk depends on a range of factors related to bird species, numbers and behaviour, weather conditions and topography and the nature of the wind farm itself.

The EIAR refers to studies which suggest that there two main types of sites that have collision problems:

1. Sites with large raptors occurring regularly within the wind farm at the same height as the rotor blades. In Ireland, the main species that would fall into this category would be golden eagle and hen harrier.
2. Sites with very high densities of other birds flying at rotor height. In Ireland this would include seabird breeding colonies and feeding concentrations, wetlands with large waterfowl concentration and on any major migration routes.

With regard to point 1, the EIAR points to studies conducted in the US and Spain on collision fatalities which suggest that hen harrier do not appear to be susceptible to colliding with turbine blades and that collision mortality should rarely be seen as a significant concern.

Hen harrier was recorded within the Potential Collision Height (PCH) for 0.2 hours out of a total of 432 hours of surveying over the 2-year period. A Collision Risk Model (CRM) was carried out for hen harrier which predicted that the mean number of predicted collisions over the lifetime of the wind farm would be 0.25 birds which

equated to one bird every 121 years. The collision risk for hen harrier is therefore low.

Kestrel were recorded at PCH for 37.5 minutes. It is noted that this species displays a hovering behaviour during hunting which contributes to the time spent at collision height and overestimates the collision risk. Kestrel is widespread in Ireland and the CRM run for the species predicted that the mean number of predicted collisions over the lifetime of the wind farm would be 4 birds, or one bird every 7 years, a small fraction of the national population (12,000 to 21,000). Given the level of use of the site by Kestrel and the high national population estimate and the collision risk estimate, it is not considered that the collision risk with turbines will be significant for kestrel.

Sparrowhawk, peregrine, snipe, cormorant, little egret and mallard were recorded at PCH height but in very low numbers and not regularly over the 2-year survey period. It is considered that these present a very low risk of collision. Passerines are not considered primary target species and are not considered at significant risk of collision.

With regard to point 2, the proposed development is not considered to represent a significant effect as the core wind farm site is not a flyway for large numbers of migratory birds, or birds in transit between roost and foraging locations. There is no evidence of large numbers of birds using the site or surrounding lands. A group of whooper swans (10-15) were observed feeding in fields to the northeast at a remove of 0.5 -1km from the nearest turbine and no evidence of whopper swan flying over the site was recorded during the site surveys.

Table 7-23 identifies and categorises the potential significance of the effect of the proposed development on bird species selected as IEF during the 30 year operational phase. The magnitude and significance of effect is assessed as Negligible or Low for the majority of the IEF, with the exception of Snipe which is assessed as Medium. Studies indicate that snipe densities did not recover after construction and levels of turbine avoidance suggest that breeding densities may be reduced within 1 500m buffer of the turbines by 15-53%. However, given the low number of snipe recorded at the site, the extent of suitable bog habitat in the wider site, and the estimated national breeding population (4,275) significant displacement during the operational phase is not predicted.

Significant effects during decommissioning

If the site is decommissioned the wind turbines and towers would be removed and similar type of machinery used during construction would be used. Underground cables connecting the turbines to the substation would be cut back and left in situ and the substation would remain in place.

The EIAR concludes that decommissioning phase works will have a temporary slight disturbance and displacement effect on bird species selected as IEF and will not have any significant effect on designated sites for nature conservation within the zone of influence of the project.

Cumulative effects

Cumulative effects are considered in terms of land management, other renewable energy developments and climate change.

In terms of land management, the cutover bog has been considerably modified from its original state compromising its ecological structure and functioning and consequently significantly reducing its ecological importance or value. There is potential for cumulative habitat loss and water quality effects when the project is considered in combination with current land management (forestry, agriculture) in the region. Given the local value of the cutover bog habitat and the relative availability of the habitat within the site and its surrounds, it is considered that the cumulative effect of habitat loss will be a long-term slight negative impact.

There is potential for the proposed development to act in combination with other wind farm developments existing/permitted in the area in the context of water quality and birds. In terms of habitat the majority of wind farms are located on cutover bog, forestry and agricultural land which are of low ecological importance for birds. Given that the loss of cutover bog habitat in the area is relatively small compared with the availability of cutover bog at wind farm sites as well as other areas in the surrounding landscape, for birds identified as IEF, it is considered that the cumulative effect of habitat loss will be a long-term slight negative effect. While there may be localised displacement around wind farm infrastructure, bird species IEF will continue to use the wider area.

Given the intervening distance between the proposed wind farm and the other 3 windfarms in the area of at least 2km, and the low predicted risk of collision, it is

considered that the risk of cumulative collision effects is a long-term slight negative impact. Species that do not fly regularly at turbine height (e.g. red grouse and many small passerines) are unlikely to be affected at the proposed development or at a cumulative level. Species that could potentially be significantly affected are those that have a large foraging range and where the numbers of individuals in a local population are of conservation concern (raptor or species of wildfowl). Overall, low densities of birds and no large groups of birds, migratory or otherwise were observed using the site during the bird surveys and collision risk has been assessed as low.

There will be loss of agricultural land considered of low ecological value and some small removal of hedgerows and trees associated with the development of the permitted Drombeg Solar Farm c 2km to the south. These habitats are of potential foraging and breeding value to birds that use the development site. It is proposed to enhance and increase the hedgerow network on the proposed solar farm site. It is concluded that the proposed development will have a long-term, non-significant negative impact with the permitted solar farm.

Climate change and changes to precipitation rates and temperatures at different times of the year may result in changes to food availability and habitat distribution and energy expenditure for both resident and migratory bird populations may have population level impacts at varying temporal and spatial scales.

The proposed development will produce a net gain in terms of carbon budgets. It will reduce the need for fossil fuel energy over the lifetime of the windfarm. This can be expected to benefit the environment in terms of climate change. The overall reduction in CO_2 emissions due to climate change is assessed as long-term imperceptible positive impact. No negative significant effects on local avifauna are predicted with regard to climate change and cumulative impacts.

Mitigation

Construction phase

A suite of mitigation measures is proposed to protect ornithological interests on the site and the surrounding areas. The measures include the following:

Mitigation by design –

All aspects of the proposed development including layout adopted an avoidance by design approach to reduce the potential for significant effects on bird species. This included

- Avoidance and minimising infrastructure placement on cutover peat habitats.
- Minimising direct habitat loss up upgrading existing access tracks, where possible.
- Avoidance of potential barrier effect on birds, the turbines are positioned at distance of 0.46km to 0.74 km apart.
- Grid connection cables will be placed underground to avoid effects on roadside hedgerows and disturbance to nesting birds.

Mitigation by management

- Appointment of a Project Ecologist with appropriate experience and expertise to conduct preconstruction, construction, and operational phase bird surveys at the site. Pre-construction and construction bird surveys will be undertaken at the same vantage point locations. The construction bird surveys will be undertaken monthly for the duration of the build.
- An Ecological Clerk of Works will also be appointed for the construction phase.

General Construction Mitigation Measures:

- Control the movement of vehicles to minimise displacement, disturbance and habitat degradation.
- Limit works to within the development footprint.
- Heavy construction work will where possible take place outside the breeding season to minimise effects on breeding birds.
- Plant and equipment will conform with noise regulations and plant/machinery will be turned off when not in use.

Measures for minimising disturbance to breeding and roosting birds:

- Vegetation removal including hedgerows/trees will be conducted outside the restricted period (March 1st to 31st August) to prevent disturbance to breeding birds.
- Unnecessary onsite human activity will be minimised especially between April-August.

- If protected species are found actively using the site for breeding/roosting in proximity of the works, works will cease and the area cordoned off pending advice from Project Ornithologist.
- Vantage point surveys will be carried out prior to and during construction.
- Should a hen harrier nest be detected within 500m of the permitted works or in the general location of the wind farm, the project ornithologist will notify NPWS. The nest will be treated as an Ecological Sensitive Area. All high impact and heavy construction activity will be suspended within 500m of any hen harrier breeding site and management measures will be agreed with NPWS. An exclusion zone will be installed and enforced throughout the construction phase and the Project Ecologist will monitor the area and ensure that all mitigation measures agreed with NPWS are fully implemented.

Site Reinstatement Measures:

- Where hedgerow or treeline removal is required the areas will be replaced with equivalent.
- Where there is requirement to remove stands of scrub, the equivalent will be replanted.
- Where re-vegetation is slow, reseeding will be carried out with suitable grass species native to the area.

CEMP:

The implementation of the proposed mitigation measures, as well as monitoring and supervision of these measures will be managed through the CEMP. The final CEMP will include the following:

- Noise, vibration, dust and air control
- Management of construction
- Water quality/sediment and erosion control
- Fuels and oils management
- Management of concrete
- Emergency Response Plan
- Tree felling/vegetation site clearance plan.

Operational phase

- To prevent habitat degradation the movement of maintenance vehicles will be limited to project footprint with the exception of maintenance works on the site drainage system.
- Monitoring programme for birds at vantage point locations. The timing and extend of bird surveys shall be agreed with NPWS.
- Ongoing consultation with NPWS to report on monitoring.

Decommissioning phase

- Reinstatement proposal will be submitted to Kerry Co Council and NPWS for approval.
- Adherence to best practice in operation at the time.

Residual Impacts

With full implementation of mitigation measures through the construction phase, the operational phase and decommission phase of the project, significant residual effects on bird species selected as IEF are not expected.

EIAR Conclusion:

- No significant effects are predicted on birds due to habitat loss during the construction, operational or decommissioning phases of the project.
- No significant effects are predicted on birds due to disturbance, displacement and barrier effects during the construction, operational or decommissioning phases of the project.
- The proposed development will not result in significant collision effects on bird species.
- The proposed development will not result in significant cumulative impacts in combination with land management and other wind farms in the area.
- The proposed development will not result in any significant effects on any of the Important Ecological Features, either alone, or cumulatively, in combination with other projects.

Assessment

The DAU contend that hen harrier using the site are those breeding in the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, and that the importance of the roost site (which is not mentioned in the EIAR) needs to be fully assessed. The observers contend that hen harrier observations have been underestimated. These matters are considered in more detail below in Section 11 (Appropriate Assessment).

The observers state that the number of birds recorded on the site is underestimated. It is contended in the submissions that the Vantage Point surveys which are from stationary positions are flawed when it comes to birds that ground forage and are typically not in flight. It is also contended that the information presented in the EIAR/NIS which suggests that Whooper Swan do not fly over the site or present a collision risk is incorrect.

In response to the contention that the recordings of sightings of species are sparse and do not match the observers experience, I note that over two years of survey work has been conducted, which include winter and breeding bird surveys. The bird surveys conducted within the study area are carried out in accordance with established best practice guidance and are adequate and proportionate to allow the impacts of the proposed development to be appropriately assessed

Regarding the use of vantage point surveys, SNH guidance recommends two broad survey types to inform impact assessment of onshore wind farms. These include distribution and abundance surveys and vantage point surveys. It could be argued that the ornithology surveys would have been enhanced by the incorporation of distribution and abundance surveys in addition to the vantage point surveys for certain ground nesting species. However, given the survey effort by the applicant and the recording of 13 bird species (excluding passerines), including ground nesting birds, I am satisfied that the surveys captured the Important Ecological Features as they relate to bird species and allows for a robust assessment of impacts.

The observers refer to whooper swan feeding sites close to the site. Whooper swan is a qualifying feature of the River Shannon and River Fergus Estuaries SPA. While the site lies within the core foraging distance for this species, the habitat available on the site, which consists of open bog with adjacent conifer plantations, is not considered suitable feeding habitat. Foraging swans were not observed on the site during any of the site surveys.

I refer the Board to Section 7.3.3.4 of the EIAR which confirms that whooper swan was recorded in both the 2018/19 and 2019/20 winter bird surveys on the same area of improved grassland to the northwest of the windfarm site. The location of the foraging area is shown in Figure 9 of Appendix 7-1. There were no observations of whooper swan in the 2019/2020 breeding surveys.

The information presented in the EIAR states that whopper swan do not fly over the site, which is disputed by the observers. I note that a regular commuting route is identified between roost sites in Ballylongford Bay and foraging areas along the Ballyline River, which lies outside the site.

I have no reason to doubt the efficacy of the information provided in the EIAR. While I accept that there is potential for whooper swan to occasionally cross the site, I accept that swans follow traditional flight paths from roosting sites and foraging grounds, and it would be reasonable to conclude from the observations made that Whopper swan does not routinely commute though the proposed wind farm site in winter.

I accept that whooper swan are susceptible to collision risk due to their low manoeuvrability and high wing loading. However, due to the low level of activity recorded and the absence of recognised flight paths across the site, I do not consider that the proposed development poses a significant risk to this bird species.

Conclusion

I consider that the information provided in the EIAR, which is supported by a range of surveys, which were undertaken in accordance with best practice guidance, and are comprehensive and proportionate, is sufficient to allow the impacts of the proposed development to be fully assessed.

While I accept that the development of the windfarm on the site will impact on bird species using the site, having regard to the limited footprint of the development and the abundance of similar habitat both on the site and within the wider area, I do not consider that the proposed development either individually or in combination with existing and permitted wind farm development would result in significant effects on birds in terms of habitat loss, displacement or collision risk.

The impacts on Annex 1 species, in particular Hen Harrier which is a qualifying interest of the adjacent SPA has also been assessed and this matter is considered in more detail under Appropriate Assessment.

I have considered all the submissions made in relation to ornithology and I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

I consider that the information provided in the planning application documentation is sufficient to allow the impacts of the proposed development to be fully assessed. I am satisfied that the impacts identified on ornithology would be avoided, managed or mitigated by measures forming part of the proposed scheme and I am, therefore, satisfied that the proposed development would not have any unacceptable direct indirect or cumulative impacts on bird species that use the site.

10.8. Water

EIAR Summary

The potential impacts of the development on the water environment are considered and assessed in Chapter 8 of the EIAR. The assessment was undertaken using a combination of a desk top study (review of relevant datasets, on-line mapping, data bases and documentation sources) and walk over surveys/field work including identification of hydrological features on the site, confirmation of site catchments, drainage regime, hydrological buffers to be implemented, measurements of slope inclination and mapping of significant features. The assessment methodology, guidance used in the assessment and relevant legislation is described in the EIAR.

In terms of the receiving environment, the development site lies to the north of the Galey River, which flows from east to west and outfalls to the Cashen River and finally into the River Shannon. The Tarmon Stream, which is a tributary of the Galey River flows south near the eastern extremity of the site. The Ballyline River and its tributaries extend from north of the site and outfall to the River Shannon downstream of Ballylongford. The Coolkeragh stream, a tributary of the Ballyline River traverses the western part of the site for a short distance. There is a network of artificial drains within the site created to lower the water table. These drains outfall to the River Galey to the south and to a series of tributaries of the Ballyline River to the north.

The site is on the boundary of two catchments. The southeast part of the site, which includes T6, T9, T10 and T12 and the electricity substation is in the catchment of the Galey River. The remainder of the site drains to the north to the Ballyline River. The Galey River is part of the Lower River Shannon SAC. The Ballyline River is not within the SAC but there is a potential hydrological connection to the SAC and the River Shannon and River Fergus Estuaries SPA via Ballylongford Bay.

The water biological water quality data (2017) indicates that water quality (Q-rating) ranges from 'Moderate' to 'Good' in the Galey River, 'Moderate' in the Tarmon Stream and 'Good' in the Ballylongford River. Physio-chemical testing results carried out at sampling locations on the watercourses are provided in Table 8-6 of the EIAR.

Regarding groundwater, the site is located within two groundwater bodies (Figure 8-4) and the site overlies an aquifer described as Locally Important which is Moderately Productive only in Local Zones (Fig 8-5). The yield class for wells in the area is described as 'Poor'. Groundwater vulnerability is 'Low' throughout the site, except for a small area at the south-east boundary that is 'Medium' (Fig 8-6).

In terms of sensitivity, the overburden deposits of peat in the study area have generally low permeability and therefore act as a confining layer, preventing the free movement of surface water to the underlying aquifer within the bedrock. The groundwater recharge is 18mm/year which is within the lowest category of National Groundwater Recharge Ireland values (1-50mm/year).

Likely significant effects during construction

There are a range of construction activities associated with the development of the wind farm with the potential to impact on hydrology and water quality during the construction phase. These include activities which could result in the mobilisation of sediment to water courses (including peat excavation, inappropriate management of excavations and of excavated peat, excavations for drainage systems, inappropriate management of the drainage of peat storage areas/spoil heaps).

There are also activities that could result in an increase in run-off rates with the potential to cause flooding downstream (removal of vegetation, increase in hard surface areas, cable trenches acting as conduits for surface water flow, blockages in drainage systems etc). The construction of new infrastructure has also the potential to obstruct overland flow and the use of machinery during construction could result in spillages of fuels, oils, lubricants, other hydrocarbons and concrete. Table 8-7 of the

EIAR provides a summary of the potential unmitigated impacts on sensitive receptor e.g. Galley and Ballyline Rivers.

Temporary drawdown of the water table will occur as a result of excavation for the turbine foundations. The depth of drawdown is likely to be less than 1metre and result in a relatively minor impact. Due to the low permeability of the sub soil and the groundwater vulnerability which is rated Low to Moderate there is a low risk of ground water contamination.

Likely significant effects during operational phase

During the operational phase the main potential hydrological impact is a slight increase in run-off from a storm event to the Galey and Ballyline rivers due to a decrease in ground water permeability at the turbine hardstands and substation locations. The potential increase in run-off is likely to be negligible due to the low permeability of the existing surface.

During the operational phase, oil will be used in cooling the transformers, with the potential for oil spills at the substation. The transformers will be located in a concrete bund which will prevent loss to the external environment. It is not considered that on-going maintenance activities on the site will give rise to any significant impacts on the hydrological regime in the area.

Decommissioning

In the event of decommissioning the turbines would be removed off site and the hard stand areas would be remediated to match the surrounding land cover at the time. The impacts would be similar to the construction stage, but of reduced magnitude.

Risk of major accidents and disasters

The risk of major accidents and disasters is also considered in this chapter of the EIAR. Any increased flow due to the presence of the wind farm would not have a measurable effect on the flow rates in the River Galey or the Ballyline rivers into which the site drains. The OPW flood hazard mapping indicates flooding incidents at Pollagh Bridge and Gabbetts Bridge, both of which were part of the same flood event that occurred in January 2005. As these locations are several meters lower in elevation than the lowest part of the subject site, it will not be adversely affected by any future flooding at these locations

Cumulative impacts

The EIAR considers potential cumulative impacts with other operational windfarms in the area. Two of the windfarms are remote and in a different catchment. The Tullahennel wind farm lies to the west of the proposed development and the Leanamore lies to the east. Both drain to tributaries of the Ballyline River. Since each of these windfarms have insignificant effects on the downstream flood risk, it is not envisaged that the addition of the proposed wind farm would cause any significant cumulative flood risk downstream. Overall, the likelihood of significant adverse effects on geology and hydrogeology arising from the proposed development and other existing and permitted wind farms in the region is considered to be negligible.

Mitigation

Construction phase

The main potential impacts associated with construction are identified as the release of sediment and other pollutants (cement, fuels/oils) to the water environment. The mitigation measures for surface water are set out in Section 8.4 of the EIAR and given that surface water and groundwater hydrology is inextricably linked, protection of surface waters in the affected catchments will also help to protect groundwater.

An Environmental Manager will be employed for the duration of the construction phase to ensure that all of the mitigation measures are implemented, and a CEMP will be prepared in advance of the works. A Preliminary Construction Environmental Management Plan has been prepared for the project and is included as Appendix 2-1 of the EIAR.

A range of standard best practice measures are proposed to reduce the potential for the mobilisation of sediment during construction. The run-off from the existing and new internal roads will be collected in open drains on both sides of the road. The drains will outfall directly to the adjacent land, most of which is peat. Each outfall will have a silt fence to collect the sediment in the run-off. Any residual sediment will be trapped in the surface vegetation so that it does not contaminate downstream watercourses. Check dams constructed with filter stone will be installed in drains where roads have a gradient greater than 2%.

Run-off from the turbine and hardstand areas will be collected separately from the road run-off and directed to settlement ponds which will allow the sediment to settle before discharge to the adjacent vegetated surface. Details of the settlement ponds

including design calculations are contained in Chapter 3 (Civil Engineering) of the EIAR.

The EIAR details best practice measures to avoid concrete entering the water environment (appropriate storage, provision of dedicated concrete chute washout area on the site, no pours will take place during heavy rainfall etc). It is not anticipated that wet concrete operations will occur within or adjacent to watercourses or aquatic zones. In the event that such operations are required, a suitable risk assessment will be completed prior to the works.

The Peat and Spoil Management Plan (Appendix 9-2) details how materials will be managed on site during construction. Mineral and peat soils will be placed separately in order to prevent mixing of materials. Temporary stockpiles of peat and mineral soils will not be permitted within 50m of any watercourse.

The drainage of the material storage areas will include settlement ponds to reduce the concentration of suspended solids in the run-off from these areas and silt fencing will be provided if deemed necessary. Overland flows will be diverted around these areas. Material storage areas will be monitored to manage any potential loss of suspended solids to surface water.

The new roads within the site will be constructed over the existing peat layer using a floating construction method and will not require site clearance. To mitigate against storm water runoff, road construction material will consist of crushed aggregate with low fines content. The use of quarry dust will not be permitted.

Standard type mitigation measures will be employed to prevent fuel/oil spills from entering watercourses (50m buffer to any watercourse, availability of spill kits, refuelling within designated areas and the installation of permanent interceptors to cater for all substation surface water drainage). Temporary petrol and oil interceptors will be installed at the site compound for plant repairs/storage of fuels/temporary generator installation.

Dedicated storage areas for waste will be provided at the compound for building materials. A Waste Management Plan will be prepared. All material considered unsuitable for re-use will be transported off site to licensed operators.

Surface water monitoring will be conducted throughout the construction period, weekly for suspended solids or ad hoc if required (rainfall event). There will be

monthly monitoring of pH, metals, nitrates and phosphates. Where a measured values exceeds the baseline value, the cause will be determined, and remedial measures put in place.

Operational stage

Potential impacts on water quality during the operational stage will be limited to minor risk of oil spillages. This has been mitigated by design and the provision of adequate bunding which will be provided at construction stage. Vehicle movement will be restricted to the internal access roads and hard stands.

Decommissioning

There is potential for surface water run-off from exposed soil surfaces such as those that will cover the decommissioned turbine foundations, with the potential to result in slight negative effects on surface water quality. However, the site drainage and sediment control measures will be in place which will prevent any silt laden run-off due to temporary disturbance and movement of soil from entering the local surface water network. No negative effect on surface water or ground water is envisaged during decommissioning.

Residual Impacts

Table 8-8 of the EIAR provides a summary of the potential impacts of the construction/operational stages on sensitive receptors and the magnitude and significance of the impact prior to and post mitigations. Subject to the implementation of the mitigation measures no significant residual effects on the water environment are predicted.

EIAR conclusion

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

Assessment

The main issues raised in the submissions relating to the water environment are impacts on surface water quality and the risk of flooding. Inland Fisheries Ireland seeks clarification that the proposed development will not interfere with rivers achieving ‘not at risk’ status under the Water Framework Directive and the planning authority state that water quality issues remain. Irish Water have concerns regarding

potential impacts on raw water sources for public water supplies in nearby towns and settlements. They also have concerns regarding potential impacts on water pipes in public roads on the delivery route to the site, some of which are asbestos concrete pipes, which would be sensitive to vibration impacts from heavy loads. The submission by Martin Walsh refers to an underground river which has not been identified in the EIAR.

Regarding water quality, the EIAR outlines significant measures to protect the water environment. These are proven best practice measures to mitigate potential impacts. Mitigation will be achieved by avoidance and design. There will be no direct discharges to any watercourse during construction and appropriate buffers will be maintained to the works. A site-specific surface water management system will be installed to prevent a deterioration in water quality arising from the development. The drainage system is designed to separate contaminated water associated with construction from clean water within the site, which will reduce the quantity of water likely to become contaminated and requiring treatment. The new drainage arrangements will be integrated into the existing drainage system on the site.

The water contaminated by the works will be collected in a separate drainage system. Dirty water drains will be provided on both sides of the access roads and around the wind farm infrastructure. Contaminated water will be diverted to settlement ponds which will reduce flow velocities, allow sediment to settle and reduce sediment loading. The outflow will then pass through a graded filter bed for further treatment prior to dispersion over a wide area of vegetation which can filter out the residual element and complete the treatment process. The settlement ponds with a three-stage treatment system are designed to provide an effective level of treatment and attenuation and the buffers around watercourses will provide additional mitigation.

Subject to the implementation of these measures and appropriate monitoring, I do not consider that the construction stage will result in significant impacts on water quality in adjacent water courses, including the Galey River downstream of the site. Following construction, the potential for sediment run-off will be significantly reduced and the retention of the drainage infrastructure post construction will ensure that water quality is protected.

I consider that the EIAR has demonstrated how water quality will be managed and monitored and subject to the implementation of the proposed mitigation measures which will be incorporated into the CEMP, no significant impacts are likely to occur which would prevent watercourses from achieving 'not at risk 'status under the WFD.

Regarding the comments by IFI in respect of the retention time for the settlement ponds, calculations of the size required are included in Chapter 3 of the EIAR (Civil Engineering). In accordance with standard practice full details of the CEMP, drainage plan, construction methodology and monitoring shall be agreed with the planning authority and IFI, before any development takes place on the site to ensure water quality is protected.

The submission by John & Dympna O' Carroll refers to two flooding events over a five-year period at the house identified as 241 in the EIAR. The house is located to the south of the windfarm site, west of Pollagh and north of the Galey River on local road L6021. The observers refer to overflow from a drain to the west of the house, which flows from the boundary of the bog, that appears to have been a contributory factor.

It is acknowledged by the applicant that flooding has occurred locally and independently of the wind farm. The completed windfarm will result in developed surfaces and an increase in surfaced areas including the turbine bases, hardstand areas and the roads. This has the potential to increase the rate of run-off into the downstream drainage system and increase flood risk. Having regard to the limited footprint of the impermeable areas within the site, the potential increase in run-off rate is not likely to be significant in the context of the catchment size and would therefore represent a negligible increase in downstream flood risk.

The roads and hardstand areas will be constructed of permeable crushed stone which will allow some rainwater to percolate through. Surplus runoff will discharge to the site-specific drainage network designed for the site. Attenuation to limit the flow rate into the settlement ponds during high intensity storm events will be provided which will in turn attenuate the flow to downstream watercourses/drains and reduce flood risk.

The settlement ponds for the proposed windfarm have been designed to cater for a maximum continuous flow rate associated with a medium intensity rainfall event. (20mm/hour). Higher intensity rainfall would be attenuated by the open drain

collection system which provides temporary storage and limits the rate at which run-off enters the settlement ponds. This will be achieved by the use of check dams within the open drains.

The flooding incidents occurred at Pollagh Bridge and Gabbett's Bridge which are on local roads over the Galey River and Tarmon Stream. These locations are several meters lower than the windfarm site and consequently the proposed development site would not be adversely affected by any future flood events at these locations.

Having regard to the mitigation measures proposed to manage and attenuate surface water flow from the wind farm site, I do not consider that it is likely that the proposed development would result in flooding on the site or increase flood risk downstream.

In terms of the issues raised by the observers regarding the cumulative effects associated with the permitted solar farm to the south of the site, solar arrays are ground mounted and placed on vegetated areas which allows surface water to percolate to ground. They do not contribute to flood risk and cumulative effects will not therefore arise.

The applicant's response addresses the issues raised by Irish Water, noting that due to the separation distance and lack of connectivity to the abstraction points there is no risk to water supplies serving Listowel, Ballylongford and Moyvane. The three settlements are served with a water supply from the Listowel source on the River Feale. The Galey River which lies adjacent to the windfarm site joins the River Feale downstream of the abstraction point and therefore can have no influence on the water supplies to these three settlements. There will be live monitoring of the streams exiting the bog to ensure that there is no impact on water quality and groundwater sources will be protected during construction. The applicant has agreed to engage with Irish Water and implement any protective measures that are required for water pipes that may exist along the local road network.

The submission by Martin Walsh refers to stream/river that is visible north-east of turbine T5 which disappears underground in a north easterly direction. The applicants response acknowledges that the bog has an extensive system of drains, some have sub surface pathways and the underground stream mentioned is of this nature. To mitigate potential impacts on any such drainage route, should they be

encountered during construction, it is intended to pipe the drain and to complete the work during low flow conditions.

Conclusion

I accept that the potential impacts on water quality can be effectively mitigation by the measures outlined in the EIAR. This will be achieved by the design of the surface water system and the implementation of proven and effective best practice measures to cover all phases of the development. I accept that the proposed development is not likely to contribute to, or increase the risk of flooding downstream of the site due to the measures proposed, including those to attenuate flows during periods of higher intensity rainfall events.

I have considered all the submissions made in relation to water quality and drainage and I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise. I consider that the information provided in the planning application documentation is sufficient to allow the impacts of the proposed development to be fully assessed.

I am satisfied that the impacts identified would be avoided, managed or mitigated by these measures and through suitable conditions. I am, therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impact on surface or groundwater in the area.

10.9. **Land & Soil**

EIAR summary

The potential impacts on land and soil are considered and assessed in Chapter 9. The assessment methodology consists of a desk top study using published maps, aerial photography and recognised data sets. Field surveys were undertaken between March 2019 and November 2000 and included walkover surveys and intrusive site investigations. This chapter of the EIAR is supported by a Peat Stability Risk Assessment Report (Appendix 9-1) and a Peat and Spoil Management Plan (Appendix 9-2).

The development site is located in a flat low-lying area of peatland. Elevations on the site range from 40m at the southwest corner to 20m in the north of the site. The

majority of the proposed development lands occupy relatively flat low-lying terrain with topographical height generally below 30mOD.

The majority of the site is covered in peat bogs, a small portion of which has been planted over with coniferous forests at the north-western edge. The majority of the turbines (Turbines T3 to T12) and the permanent meteorological mast are located in areas mapped as *Peat Bogs*. T1 is located in an area of *Mixed Forest* and T2 is located in an area of *Pastures.* A significant amount of small-scale peat extraction has taken place throughout the wind farm site. The grid connection and substation are mapped in areas of *Peat Bogs* and *Pastures*.

All of the wind farm, substation and replacement lands are underlain by the Shannon Group Formation, which consists of mudstone, siltstone and sandstone. The predominant soil type present at the proposed wind farm site is 'Cutover/ Cutaway Raised Bog'. There are no Geological Heritage Sites within the site.

Peat probes (126 no.) were undertaken across the site. The maximum peat encountered was 7.4m and the minimum depth of peat cover was 0.0m at T1. The average depth for the data set across the study area was 3.2m. The Peat Stability Risk Assessment confirms that all of the turbines have been placed in areas of low residual risk of peat stability.

A quantitative risk assessment of slope stability at the site was carried out using infinite slope analysis, which is in line with best practice from the Scottish Government 'Peat Landslide Hazard and Risk Assessment Guidelines' (2017). It found that the worst-case Factor of Safety against peat stability was 1.9 in an area to the west of T11. The vast majority of the site has a FoS greater than 4[5] indicating stable conditions.

Forestry will be removed within the site and replacement lands are proposed to replace the forestry felled as part of the development. The lands are situated to the west of T7 and the soils and bedrock are similar to the rest of the development site.

The removal of peat and subsoil from turbine bases, internal roads and cable trenches in addition to the interference with existing site drainage, is a direct permanent effect that, without mitigation, could alter the existing land and soils environment at the site. It could also impact on the hydrological and hydrogeological

[5] The likelihood of a slope failure is expressed as a Factor of Safety (FoS). An acceptable FoS is greater than 1.0.

balance of the site. Removal of some minor quantities of bedrock at turbine base excavation may be required. Should bedrock be encountered only minor quantities will require removal to create a level platform for the turbine foundations. No mass excavation of bedrock, hydraulic breaking of rock or blasting will be required.

The natural land and soils on the site have been modified over large areas of the site predominantly by peat cutting operations but also by agricultural practices and commercial forestry activity. These activities have disturbed the peat and subsoils in large proportions of the site. Areas which have not been highly modified by peat cutting, agriculture and commercial forestry activities have been avoided where possible in the design of the windfarm.

Likely significant effects during construction

There are a range of activities with the potential to alter the existing land and soils environment at the site during construction which include felling of trees, roads and drainage, excavation works, storage of materials, soil erosion and waste generation.

The land use in the vicinity of the site infrastructure will be changed for the duration of the wind farm's operational life. Trees will also be felled in the north-western corner of the site and replacement planting will be provided. The lands can be reinstated at the end of the operational life of the windfarm such that it can again be used for agriculture/forestry.

Approximately 11,280m of internal roads are required within the site. A combination of new (6,850m) and upgraded existing access tracks (4,430m) and an upgraded drainage network will be installed across the site. The existing drainage network will be upgraded and settlement ponds and settlement traps installed at key locations. These works will involve both excavation and importation of soil/peat and crushed rock.

The design of the layout has utilised existing tracks within the site as much as possible to reduce the material volumes and minimise impacts associated with road and drainage construction. Given the modified nature of the lands and soils at the site and the mitigation by avoidance approach adopted in the design, the construction of the roads and drainage represent a moderate negative permanent effect.

The excavation works required during construction will result in the removal of soil, subsoil, peat and bedrock at the site resulting in a direct impact on land and soil on the site. Removal of some minor quantities of bedrock at turbine bases excavation may be required but no mass excavation of bedrock, hydraulic breaking of rock or blasting will be required. It is not envisaged that the impact will be significant as the volume of material to be excavated will be managed, reused and stored locally on site. Mitigation by avoidance and by design was applied when choosing the proposed layout. Locations for development infrastructure were selected within areas of cutaway peat where possible. This reduces earthwork volumes and minimises impacts on the existing nature of the site. Floating roads will be used in peat areas to reduce excavation volumes and the impacts on lands and soils.

Regarding the storage of materials, the excavated peat will be managed in a manner that will not cause a risk of peat movement or sediment run-off. The excavated peat and soil will be re-used on site as appropriate (backfilling turbine foundations, drainage berms, landscaping). Remaining excess peat and soil will be placed in the dedicated storage areas.

Regarding soil erosion and peat stability, the top layer of the peat will be set aside and re-used for natural revegetation on site. Revegetation will promote stability, reduce desiccation, run-off erosion and susceptibility to freeze/thaw action. The risk of erosion of soil or stockpiling of excavated material can be managed through good site practice. A Sediment and Erosion Plan is detailed in Chapter 3 of the EIAR.

A detailed assessment has been undertaken on the site (Appendix 9-1) to address matters relating to peat instability. Higher risk peat stability areas were avoided when designing the site layout and as such it can be concluded that the risk of instability is low for the layout proposed. Vehicle movements will be contained on constructed tracks/roads and will not therefore pose a risk on peat areas in terms of stability risk. Roads will be constructed by advancing them from the existing or newly constructed sections of road to avoid tracking over peat. Specialised wide tracked machinery and excavators will be used in the limited circumstances where access over peat is necessary prior to road construction.

Inappropriate management of waste on the site has the potential to impact on land and soils. Excavated materials will be re-used as far as possible on the site. The handling, storage and management of excavated spoil shall be carried out in line

with the CEMP. Waste will be managed, collected, stored and segregated in separate areas and removed off -site by a licenced/permitted contractor. At regular intervals. The level of waste generation on site will be minimal and will result in a slight negative impact during the construction phase.

It is proposed to provide replacement forestry on a site to the northwest of the wind farm site. The impacts will be similar to the construction phase and will involve construction of access roads and the installation of a drainage network. The impact to the soils environment from planting forestry on replacement lands is considered a slight negative long term reversible impact. The impact to the land environment from planting forestry on replacement lands is considered a neutral long-term reversible impact.

Likely significant effects during operational phase

The impact on land and soil during the operational stage will be small scale and infrequent, associated with potential excavations for drainage and road and cable maintenance. Some erosion of soil will continue into the operational stage but as the area becomes revegetated and stabilised erosion rates will reduce to pre-construction levels. The impacts during the operational stage are assessed as slight medium-term negative impacts on the land and soil environment.

Likely significant effects during decommissioning Phase

Should decommissioning of the wind farm takes place turbines would be removed, but it is envisaged that the access roads would remain in place. The hardstand and turbine foundation areas would also remain in situ and covered with soil. Cables from the grid connection would be removed from the ducts without opening the trenches. The potential impacts during the decommissioning stage would be similar to those during construction but of reduced magnitude as extensive excavation and wet concrete handling will not be required. The impact is assessed as slight negative and long term.

Cumulative Effects

Due to the localised nature of the proposed construction works which will be kept within the proposed development boundary, there is no potential for significant cumulative effects on land and soil in-combination with other local development.

Mitigation Measures

A suite of mitigation measures are outlined in the EIAR to minimise potential impacts on land and soil. This will be achieved in the first instance by design and by avoidance of potential impacts in the layout of the proposed windfarm. The area of land required for the construction, operation and decommissioning of the windfarm has been kept to the minimum and the turbine locations, alignment and rotation of the hardstands and the routes of the access roads were designed to minimise the volumes of materials extracted. Excavation will be carried out from access roads or hardstand areas to reduce the compaction of peat. Drainage will be constructed in parallel with road construction and turbine excavation and when working in peat areas bog mats 'bogmaster' excavators will be used. All other vehicle movements will be restricted to new/existing roads and hardstands.

The risks associated with peat placement will be mitigated by reducing overall peat extraction by design of access road and turbine locations, and the planting and re-seeding of material storage areas and peat deposition areas which will provide resistance against rainfall events and minimise sediment and nutrient release.

The risk of peat instability within the windfarm has been assessed and higher risk areas are actively avoided in the design of the wind farm layout. The areas where construction will take place generally presents a negligible to low level risk for a peat environment. Localised areas of medium risk of peat instability have been identified to the north of T6, east of T9 south of T8 and near T11. When mitigation measures are applied, the risk reduces to low. A localised area of significant risk has been identified to the west of T 11, which reduces to medium risk when mitigation is applied.

To manage construction, risk the following measures are proposed.

- All site excavations and construction will be supervised by a suitably qualified Geotechnical engineer. Only operators with proven experience in working in peatlands will be employed for any work operations involving excavation, handling or placement of peat.
- Prior to construction, drains will be established to intercept overland flow prior to earthworks.
- The existing network of drains within the site will be utilised whenever possible.

- All excavated peat will be immediately removed from work areas. If peat is required for reinstatement, the top layer (acrotelm) will be stripped off the surface and placed at the margins of the work areas along the access road and hardstand margins that are characterised by near horizontal slopes.
- Construction activities would be assessed for landslides impact after prolonged periods of heavy rainfall.
- The majority of peat slides occur after an intense period of heavy rainfall. An emergency response system should be developed for the construction phase which should include as a minimum a 24 hour advance meteorological forecasting linked to a trigger-response system. The response should include cessation of construction until the storm event, including storm runoff has passed over.
- Construction methodologies for excavations in deep peat will need to consider that depths of over 7m are present in places on the site and large scale excavations would be required to secure a firmer strata below the peat to accommodate turbines and crane hardstands. Temporary stabilisation measures at the sides of the excavation will be required to prevent peat movements into the excavation. Drainage works will also need to be installed so that water is directed away from areas where there are steep banks of peat to avoid saturation of the peat. This is particularly important consideration in the area to the west of T9 where evidence of previous movement and tension crack was noted during the desk top and site walkover.
- Stockpiling of materials will not be permitted on peat. Excavated material will be removed to the designated deposition area immediately following excavation.
- More stringent measures will be applied to the area of significant risk to the west of T 11. These include no stockpiling of material in the area, more frequent monitoring/inspection of the floated road, use of log road construction. Consideration will also be goven to the use of logs to pile the section of road through the area to transfer loads to a firm strata below the peat and there will be no excavation or removal of peat in the area.

Peat monitoring by sightline monitoring method will be carried out by the contractor for the development. This entails driving a series of posts at approximately 5m centres, exactly aligned across the section of bog being monitored. This will allow any signs of distress or deformation of the bog to become evident by some of the posts moving out of alignment. This will enable the developer to implement emergency procedures to prevent the onset of a bog burst or localised peat slide. While the risk of such occurrence is considered to be low, in accordance with the precautionary principle, monitoring posts should be installed in work areas where there are areas with a risk rating higher than 'low' or peat depths are greater than 2m.

The EIAR also details a range of best practice mitigation measures to address potential impacts associated with excavation, storage and management of excavated material, waste management, general site management, drainage, surface water and replacement forestry.

During the operational stage the potential impact on land and soil will be lower as the majority of the excavations will have been reinstated. Sediment control measures will remain in place onsite during this stage. Vehicle movements will be lower, restricted to the areas of hardstand, roads and forestry tracks.

The decommissioning stage will have similar impacts to the construction stage but of reduced magnitude.

Cumulative Impacts

The implementation of the mitigation measures proposed for each phase of the project will mitigate against cumulative impacts associated with land and soils.

Residual Impacts

Due to the modified nature of large parts of the site and the mitigation measures proposed, no significant residual impacts are likely due to the construction and operation of the proposed development.

EIAR Conclusion

The conclusion reached in the EIAR is that the proposed development does not constitute a significant adverse effect on the land and soils environment of the site and the surrounding area, having considered cumulative effects with other existing and/or approved projects.

Assessment

The main issues raised in the submissions relate to peat stability, the proximity of the peat deposition areas to residential property and the underestimation of peat depths.

As noted above, detailed assessment of peat stability has been undertaken on the site to determine the stability of the existing peat slopes and identify areas of peatland that are suitable for development. The assessment follows the principles set out in *'Peat Landslide Hazard and Risk Assessment: Best Practice Guide for proposed Electricity Generation Developments'* (PLHRAG, 2017), which is considered best practice for assessing peat stability on a site.

The findings of the peat stability assessment showed that the proposed wind farm has an acceptable margin of safety and is considered to be at low risk of peat failure. Subject to the implementation of the proposed mitigation measures, no significant risks relating to peat stability have been identified. The risk of instability is assessed as low in the locations of the turbines and other site infrastructure, with the exception of the area to the west of T11 where additional mitigation as documented in the EIAR will be required.

The submission by Catherine Keane and Charles Mc Carty raises concerns regarding the potential for a peat slide due to the location of their dwelling (No. 244) within 450m of a peat deposition area. The house in question is located on the L6021 local road to the south of the site and to the south west of the largest peat deposition area.

The applicant's rebuttal states that the use of storage areas is similar to other storage areas designed and constructed on numerous wind farms across the country and is a proven way of storing peat. The location of the particular storage area is considered acceptable due to the flat nature of the ground and easy containment using engineered berms founded on a solid foundation.

The construction of the berms is described in Chapter 3 (Civil Engineering). Retention berms founded on a solid foundation layer below peat will be constructed around the peat deposition areas. The berms shall be constructed from free draining granular material or cohesive material with drainage outlets to prevent water build up. The drainage system will extend around the deposition areas with temporary silt fences and settlement ponds designed to cater for the size of each storage area The deposition areas will also be split into cells using internal berms to ensure that they

are more manageable in size and to reduce the risk of peat movement during construction. In addition, peat will not be stored to a significant depth and the storage area will be provided with a fully designed drainage system. The peat storage area is therefore not considered to pose a risk to residential properties in the vicinity.

The application is supported by a Peat and Spoil Management Plan (Appendix 9-2) which includes a methodology to prevent peat slippage and bog burst. This is mitigated by design in the first instance and the placing of turbines and other infrastructure, including the peat deposition areas at locations within the site identified as low risk for instability. Subject to the application of the mitigation measures proposed, which includes a defined construction methodology and monitoring procedures, I do not consider that the potential for a peat slide is likely.

The applicant's response also notes that the majority of peat slides have occurred after an intense period of rainfall. It is recommended that an emergency response system be developed for the construction phase. This would involve at least 24 hour advance meteorological forecasting linked to a trigger response system. When a pre-determined rainfall trigger is exceeded (e.g. 1 in 100 year storm event or very heavy rainfall at 25mm/hr), planned responses are undertaken, which would include the cessation of construction until the storm event, including storm run-off has passed over.

Regarding the assertion that the depth of peat recorded is grossly underestimated, and that depths of up to 20m have been recorded, I accept the applicant's response that there may be areas of deeper and shallower peat within the site. The peat probes were focussed on those areas of the site where infrastructure will be placed and the records of peat depths encountered are recorded in the Peat Stability Report In the absence of any conflicting data, I have no reason to doubt their accuracy.

Conclusion

The findings of the geotechnical investigations and the peat stability assessment report which has been prepared in accordance with best practice guidance suggests that the site is suitable for a wind farm development and is at low risk of peat failure, subject to the mitigation measures proposed and effective monitoring. Impacts on land and soil is mitigated by design and the avoidance of deeper areas of peat, the use of floating roads where possible and the reuse of excavated material within the site.

I have considered all the submissions made in relation to land and soil consider that the information provided in the planning application documents is sufficient to allow the impacts of the proposed development to be fully assessed. I am satisfied that the impacts identified on land and soil would be avoided, managed or mitigated by the measures forming part of the proposed scheme and by suitable conditions. I am, therefore, satisfied that the proposed development would not have any direct, indirect or cumulative on these environmental factors.

10.10. Air & Climate

EIAR Summary

Chapter 10 of the EIAR describes the likely significant impacts of the construction, operation and decommissioning stages of the proposed development on air quality and climate.

EPA ambient air quality data was used to characterise the existing air quality in the area. The site lies in a rural area and air quality is described as 'Good'. In terms of local climate, the nearest synoptic station to the windfarm site is located at Shannon Airport and the average monthly precipitation, rainfall and wind speeds for the period 1981-2010 are summarised in Table 10-2.

Likely significant effects during construction stage

The main emissions likely to be generated during the construction phase are dust emissions and exhaust emissions from vehicles.

Dust emissions

The NRA has published guidance[6] for assessing dust impacts at a local level from road construction. Similar construction methodologies to road construction will be employed during the construction of the proposed windfarm. Using the NRA assessment criteria, the construction of the wind farm is characterised as a medium sized construction site where dust is unlikely to cause an impact at sensitive receptors beyond 50m of the source, with standard mitigation measures in place. There is a minimum separation distance of 500m between the nearest dwelling and

[6] Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes, (NRA, 2011).

major construction elements, therefore dust is unlikely to be a significant impact at the nearest dwellings.

Vehicle emissions

The construction phase will involve the use of vehicles and plant which will generate exhaust emissions. Given the scale of plant and machinery involved, the high levels of dispersion and the limited extent and duration of the, significant impacts to air, climate and sensitive receptors are not predicted.

Likely significant effects during operational stage

Once operational there will be no direct emissions to the atmosphere from the wind farm. The electricity generated will result in a reduction in CO_2 and other emissions normally associated with the generation of electricity from fossil fuels. The impacts will be therefore be positive in terms of air quality and climate.

To demonstrate that the carbon savings will significantly outweigh any potential carbon losses a methodology set out in '*Calculating carbon savings from wind farms on Scottish peatlands'*, developed by the Scottish Government was applied to the development. The theoretical worst case carbon losses due to the proposed wind farm are set out in Table 10-3.

Likely significant effects during decommissioning stage

The decommissioning stage is expected to result in similar impacts as the construction stage, but of reduced magnitude as elements of the development, including turbine bases and roads would remain in place.

Cumulative Impacts

There will be no significant cumulative impacts from the temporary construction phase on either air or climate. The potential cumulative operational impact with other renewable energy projects will be long term significant positive effect on air and climate.

Mitigation

During construction standard mitigation measures will be employed to control dust and emissions. This will include use of water as dust suppressant, provision of wheel wash facilities, regular inspection of public roads, control of vehicle speeds, stockpiling of material to minimise exposure to wind and regular site inspection to

ensure dust measures are effective. Measures to mitigate exhaust emissions include appropriate maintenance of vehicles/machinery, implementation of the traffic management plan to minimise congestion and switching of vehicles/machinery when not in use.

During the operational stage it is not expected that any negative impacts to air or climate will occur, and no mitigation measures are considered necessary. The loss of CO_2 will be offset quickly and any reduction in carbon sequestration because of the early felling of forestry to facilitate the construction of the windfarm will also be quickly off-set. Any trees felled will be replanted in another location resulting in no net loss.

Impacts resulting from the decommissioning stage are expected to be similar to those arising during construction but of reduced magnitude. Similar measures to mitigate dust and vehicle emissions are recommended.

With regard to residual impacts, no significant impacts on air/climate are predicted for the construction stage. The operational stage will have significant long term beneficial effects on air quality and climate.

EIAR Conclusion

The proposed wind farm project will facilitate decarbonisation objectives at local and national levels as set out in the Climate Action Plan 2019, without adverse impacts to air quality or climate.

Assessment

The main issues raised in relation to air and climate are associated with the carbon balance on the site. It is stated in the submissions that no consideration has been given to the net gain in CO_2 emissions that would be achieved if the windfarm was located on marginal lands with no peat deposits. It is also contended that no consideration has been given to the carbon losses after decommissioning due to the permanent loss of peat and vegetation due to the removal of roads and turbine bases and associated drainage works that will dry out the bog resulting in more carbon loss. The DAU considers that the impact of CO_2 emissions during construction and over the lifetime of the wind farm should be taken into account in the assessment of cumulative effects, compared to the alternative option of re-wetting parts or all of the peatland.

In response to further information a more detailed analysis was submitted on the carbon losses/gains over the lifecycle of the proposed windfarm (Appendix 2). In the absence of an Irish equivalent the assessment uses the Scottish Government's Carbon Calculator[7], which is an established methodology developed to determine the carbon impact of windfarm developments. This methodology calculates the carbon costs of windfarm development with the carbon savings attributable to the windfarm.

The total carbon emissions savings from a wind farm are estimated with respect to emissions from different power generating sources, loss of carbon associated with the production, transportation, erection, operation and decommissioning of the windfarm, loss of carbon from backup power generation, loss of carbon-fixing potential of peatland, loss and/or saving of carbon stored in peatland, carbon saving due to improvement of habitat and loss of carbon fixing potential as a result of forestry clearance. It uses a full life cycle analysis approach and includes restoration of the site after decommissioning.

It is noted in the response that the calculating methodology assumes development on a waterlogged undrained bog with the bog acting as a carbon sink due to anaerobic conditions. However, the Shronowen Bog is not waterlogged and peat harvesting activities have resulted in a permanent lowering of the water table, which has resulted in aerobic conditions and steady release of carbon to the atmosphere. The bog therefore acts as carbon source as opposed to a carbon sink and the results of the assessment is therefore considered likely to overestimate the actual carbon emissions.

The core data inputs and assumptions are presented in tabular form in Appendix 2 of the response. The calculations show 142,231 tonnes of CO_2 equivalent losses over the windfarms 30-year lifespan. The calculated spreadsheet uses counterfactual emissions factors to calculate the payback period. As there is no clear guidance on the appropriate emissions factors to use in Ireland, a grid mix emission factor sourced from the SEAI document 'Energy Related CO_2 emissions in Ireland 2005 to 2018' was used as the counterfactual emissions factor. This resulted in a payback time of 1.8 years. The applicant notes that this is in line with a recent study (Wind

[7] Calculating carbon savings from wind farms on Scottish peatlands. Scottish Government.

Power and Peatland, Scottish Renewables, 2020) which states that all wind farms included in a number of studies achieved carbon payback within two years.

In response to the issues raised regarding the use of peat lands vis-a-vis more marginal lands which may not contain peat, the applicant states that the focus for the development of the wind farm was on lands zoned as 'open for consideration' rather than specifics in relation to land/soil types. Regarding the impact of the development on the bog as a carbon sink, the applicant notes the severely degraded nature of the bog which has occurred over many decades. Continuous drainage, a reduction in the water table and peat extraction has resulted in drying out of the peat and it no longer acts as an active carbon sink. The proposed development will not change the current state of the bog or its ability to sequester further carbon. Whether planning permission is granted for the wind farm or not, the current practice of peat extraction and drainage will continue, and the bog will be further degraded and will not have the capacity to act as a carbon sink over time.

The restoration of the bog to a stage where it could act as a carbon sink would require decommission of the drainage network, the cessation of peat extraction and harvesting and blocking of drains to rewet the bog. The applicant states that it does not have the legal right to implement such as scheme and accordingly it is outside the remit of the application.

In response to the DAU submission, the applicant recognises that the capacity of the bog to store carbon would increase with rewetting. However, this is not currently considered a possible option as it would mean extinguishing existing turbary rights and the consent of landowners to the removal of other land uses at the edge of the bog including forestry and agriculture. The severely degraded nature of the bog would also have a bearing on the success, and it may take several decades before any substantial level of rewetting could be achieved.

Conclusion

While peatland habitats are large sources of terrestrial carbon, the site of the proposed windfarm is significantly degraded and its ability to store carbon is significantly reduced. I accept that the proposed windfarm which will occupy a limited footprint within the overall site will not significantly change the current state of the bog or its ability to sequester further carbon.

The carbon balance associated with the proposed development has been assessed using a recognised methodology and provides a total life cycle perspective, including decommissioning. I am satisfied that carbon savings will be achieved compared to power derived from more conventional forms of power generation. Having regard to existing landowner and turbary rights on the bog which are not part of the wind farm proposal, I accept that rewetting the bog to increase carbon storage is not a option for the applicant.

I have considered all the submissions made in relation to air and climate and I consider that the information provided in the planning application documents is sufficient to allow the impacts of the proposed development to be fully assessed. I am satisfied that the impacts identified on air and climate would be avoided, managed or mitigated by the measures forming part of the proposed scheme and suitable conditions. I am, therefore, satisfied that the proposed development would not have any direct, indirect or cumulative on these environmental factors.

10.11. Noise & Vibration

EIAR Summary

Chapter 11 of the EIAR assesses the potential noise and vibration impacts associated with the construction, operational and decommissioning phases of the proposed development. This chapter is supported by Appendix 11-1 to 11-3 contained in Volume 3.

The assessment methodology includes the establishment of baseline noise conditions at representative noise sensitive receptors. Noise limits were established based on the measured baseline noise levels in accordance with best practice. Computer software was used to predict the noise emissions from the wind farm at the nearest noise sensitive receptors which were then compared against noise limit criteria to assess the likelihood of significant effects.

A total of 6 no. noise monitoring locations (Fig 11-2) were selected to characterise the existing noise environment and to derive the noise limit criteria for potentially impacted locations. The EIAR describes the survey methodology, which was conducted in accordance with the guidance set out in the Institute of Acoustic's *'Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* (IoA GPG, 2013). Details of the dominant noise

sources observed at each of the noise monitoring locations are contained in Appendix 11-1. The background noise levels at these locations are typical of any rural setting.

Likely significant effects during construction stage

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

There is no statutory Irish guidance relating to the maximum permissible noise levels that can be generated by the construction phase of a development. Best practice guidelines are taken from BS5228-1:2009=A1:2014 *'Code of practice for noise and vibration control on construction and open sites-Noise'.*

Under this guidance noise sensitive locations are designated into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction activity. This then sets a threshold noise value that, if exceeded, indicates a significant noise impact is associated with the construction activities (Table 11.1 of EIAR). Given the rural nature of the site, all noise sensitive locations have been afforded a Category A designation. If the specific construction noise activity exceeds the appropriate category value (e.g 65 dB $L_{Aeq,T}$ during daytime period) then a significant effect is deemed to have occurred.

The EIAR considers each element of construction (roads, cabling and turbine erection, substation construction). Table 11-5 and Table 11-6 sets out details of plant items that will be used during the construction, typical sound pressure levels at 10m and the predicted noise level at the nearest noise sensitive locations at 200m. The predicted noise levels associated with construction activity are below the significance threshold of 65 dB $L_{Aeq,1\ hr}$, which removes the potential for significant adverse effects on sensitive receptors.

The conclusion reached in the EIAR is that as construction activities are relatively minor, temporary and of short duration mitigation will not be required. Best practice general measures for the reduction of construction noise at source are outlined in BS5228: Part 1: 2009 and these will be incorporated in the CEMP.

There will also be noise from construction traffic and the most intense period will occur during the pouring of the turbine bases. The average L_{Aeq} over the course of

an hour from passing HGV's is predicted to be 71 dBA. While this is above the threshold, the noise impact from HGV concrete deliveries is not considered significant as the base pours will occur 12 times (associated with the 12 turbines) and typically these days will not occur concurrently.

Piling may be required at turbine foundations but given the separation distance to dwellings significant vibration impacts are not considered likely and no mitigation measures are required.

Likely significant effects during operational stage

The greatest potential for noise related impacts will occur during the operational stage. The EIAR considers noise levels associated with the proposed turbines and the substation. It also considers other wind farms in the area for the assessment of cumulative impacts.

It acknowledged that the 2006 Wind Energy Guidelines are being revised and that a draft version of the replacement guidelines was published in 2019. Pending the publication of the final document the 2006 guidelines remain in force and are the guidelines which the Board must have regard in its determination of the application.

The EIAR refers to the noise limit thresholds described in the Wind Energy Guidelines 2006 and states that for the purpose of the assessment the fixed lower limit has been set at L_{90}40dB(A), which is lower than typical noise limits (L_{A90}43dB or 5 dB above background) set down in recent planning conditions for similar developments in the area.

Table 11-3 and Table 11-4 of the EIAR presents the derived $L_{A90\ 10min}$ noise levels for each of the noise monitoring locations at wind speeds ranging from 4m/s to 10m/s. These have been derived using regression analysis carried out on the data sets. The data presented indicates that background levels range from 27 to 33 L90 dB(A) at low wind speeds and up to 41 to 49 L90 dB(A) at wind speeds of 10m/s for amenity hours. Night-time levels ranged from 21 to 25 L90 dB(A) at low wind speeds to between 36 and 45 dB(A) at higher wind speeds.

Noise prediction software (iNoise2020.1 V1) was used to quantify the noise levels associated with the operational wind farm. The Vestas V136 has been modelled in the analysis. Sound power levels at various wind speeds (with factor of +2 dBA added to take account of margin of uncertainty as per the IOA GPG) are set out in

Table 11-9. The EIAR also considers other wind farms in the area and the sound power levels for the purposes of cumulative impact assessment (Tables 11-10 to 11-13).

The noise assessment results (Table 11-14) show that the proposed wind farm can meet the noise limit criteria set out in the 2006 Wind Energy Guidelines both on its own and cumulatively with the existing operational and permitted windfarms in the area at the nearest noise sensitive receptors. At all locations and at all wind speeds the predicted noise emissions do not exceed the derived limit criteria for both the quiet daytime and night-time periods.

Noise predictions were carried out for all receptors within the study area that is within 3km of a Shronowen wind turbine. This included receptors that were within the zone of influence of other windfarms in the area. The results indicate that the absolute lower limit value of L_{90} 43dB(A) was achieved cumulatively at each location within the 3km study area for all wind speed, except at locations 78, 123, 168 and 320. However, the predicted Shronowen noise levels are 10dB(A) below the 43 dB(A) lower limit thresholds at these locations which means that the proposed wind farm turbines cannot cause the lower limit threshold to be exceeded at these locations. Due to the logarithmic addition of decibels if one noise source is 10dB below another, it is stated in the EIAR that there will be no increase in noise levels (Table 11-15).

The substation will typically be in operation 24 hours a day and 7 days a week. The predicted noise level associated with the operation of the substation at the nearest noise sensitive receptor (c 214m) is 38 dB(A). A 4.5m high grass berm will be constructed around the substation which will reduce the noise level by at least 5dB to 33 dB, which is below the EPA's environmental night-time threshold of 35dB(A) for areas of low background noise[8].

There are no significant sources of vibration from an operational windfarm and there will be no significant sources from ongoing maintenance.

Likely significant effects during decommissioning stage

[8] Guidance Note for Noise: Licensed Applications, Surveys and Assessment in Relation to Scheduled Activities (NG4).

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

Special audible characteristics

The EIAR considers special audible characteristic associated with wind farms which include tonal noise, amplitude modulation and low frequency noise.

Regarding tonal noise, it is stated that improvements in turbine design have greatly reduced potential tonal noise. In accordance with established practice, a warranty will be sought from the turbine manufacturer guaranteeing no tonal content at the nearest noise sensitive receptors.

With regard to amplitude modulation (AM), it is stated that modern wind turbine can generate normal AM but this usually disappears at 3 to 4 rotor lengths, with the exception of cross wind conditions. The occurrence of AM cannot be reliably predicted. Should it arise, it will be investigated and if complaint is justified, it is capable of mitigation.

Low frequency noise and infrasound are addressed in Section 11.4.2.3. There is reference to the EPA '*Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites'* which states that there is no significant infrasound from wind turbines. It was a prominent feature of passive yaw 'downwind' turbines. However, with modern active yaw turbines where the turbines face into the wind, it is no longer a significant feature. The turbine selected for the site will be a modern active yaw turbine.

The EIAR also refers to the Draft Wind Energy Guidelines 2019 which also state that there is no evidence that wind turbines generate perceptible infrasound and that natural levels of low frequency noise arises in the environment (air turbulence, rivers etc). It states that if a complaint arises, it will be investigated, and corrective action taken if the complaint is justified.

Mitigation

Construction activities are relatively minor, temporary and of short duration and the impacts will not be significant. No noise mitigation measures during construction are required. BS5228: Part 1: 2009 outlines general measures for the reduction of noise levels at source which will be incorporated into the CEMP. Piling may be required at

the turbine foundations, but due to the separation distance to the nearest dwellings, significant impacts are unlikely and no mitigation measures are required.

During the operational phase the wind turbine noise levels at all identified receptors within 3km will not exceed the noise limit criteria either permitted or proposed. No noise mitigation measures are therefore required. There are no significant vibrations from an operational wind farm and no mitigation measures are required.

Best practice will also be adopted during the decommissioning stage to minimise noise and vibration generated by activities.

Residual Impacts

No significant residual impacts are predicted for any phase of the development. The noise thresholds will not be exceeded during the construction/decommissioning stages of the development and once operational the noise levels will not exceed planning limit criteria for the protection of residential amenity.

Assessment

The planning authority refer to the potential for cumulative noise impacts during the construction stage. There are also concerns raised in the submissions relating to the cumulative operational impacts in conjunction with existing and permitted windfarms in the vicinity. Also of concern is the potential impacts on residential amenity associated with noise and special audible characteristics that may arise including amplitude modulation.

Contrary to the planning authority's assertions the potential for cumulative impacts with other permitted, but as yet unconstructed developments have been considered and assessed in the EIAR. The developments in question include a wind farm c 3km from the site (Ballylonford Wind Farm) and for a solar farm c 1.5km to the south.

I accept applicant's position that due to the distance of 3km to the Ballylongford wind farm site and the temporary nature of construction activity, the potential for significant cumulative noise impacts is not likely to arise. While the proposed solar farm and associated substation are in closer proximity, the construction phase for this development is of short duration (c 20 weeks) and of significantly lower impact and is not likely to result in significant cumulative effects on sensitive receptors in the area.

I also accept that the operational cumulative effects of the proposed development in conjunction with existing/permitted windfarms has been adequately considered and assessed in the EIAR and that it has been demonstrated that noise emissions from both the proposed windfarm on its own and cumulatively with other windfarms are compliant for day-time and night-time periods for all wind speeds.

Regarding amplitude modulation (AM), it is considered in the EIAR and noted to be a recognised phenomenon which can give rise to annoyance. However, the likelihood of occurrence at a particular windfarm cannot be reliably predicted at planning stage and only becomes evident once the turbines are operational. In accordance with established practice, should AM does arise on the subject site, it is capable of effective mitigation.

The submissions refer to the Wind Energy Development Guidelines 2006, stating that they are out of date and that the draft guidelines 2019 should be adopted to in order to protect residential amenity. The 2006 guidance permits a maximum of 45 dB in relation to noise emissions. The preferred draft approach as set out within Section 5.7.4 of the 2019 draft guidelines propose noise limit restriction limits consistent with World Health Organisation Guidelines of 5 dB(A) above existing background noise within a range of 35 to 43 dB(A) with 43 dB(A) being the maximum noise limit permitted day or night. These noise limitations are below those permitted under the 2006 guidelines.

The result of the assessment indicates that the proposed Shronowen wind farm can operate within the noise criteria set out in the 2006 guidelines. There will be exceedances of the 43 dB(A) noise limit at higher wind speeds at 4 no. properties within the 3km study area, which includes receptors within the zone of influence of existing/permitted windfarms. As noted above the proposed windfarm will not contribute cumulatively to the noise levels at these locations.

I accept that subject to the standard condition applied by the Board the proposed windfarm both on its own or cumulatively with other existing and permitted energy infrastructure in the area is not likely to result in significant impacts on sensitive receptors or the amenities of the area.

Conclusion

I am satisfied that the noise assessment is robust and identifies all of the potential impacts associated with the construction and operational stages of the development

and considers cumulative effects. I accept that noise associated with the development is not likely to result in significant effects on sensitive receptors and no significant vibration effects are predicted which would impact on nearby receptors.

I have considered all the submissions made in relation to noise and vibration and I consider that the information provided in the planning application documents is sufficient to allow the impacts of the proposed development to be fully assessed. I am satisfied that the impacts identified on noise and vibration would be avoided, managed or mitigated by the measures forming part of the proposed scheme and suitable conditions. I am, therefore, satisfied that the proposed development would not have any direct, indirect or cumulative on these environmental factors.

10.12. Landscape

EIAR Summary

Chapter 13 of the EIAR provides an assessment of the landscape and visual effects of the proposed development and is supported by Volume 4 (Photomontages). The assessment is conducted in accordance with the methodology described in the Guidelines for Landscape and Visual Impact Assessment (3rd edition, 2013.) published by the UK Landscape Institute and the Institute for Environmental Impact Management and Assessment (GLVIA). The EIAR lists other guidance documents used in the assessment (Section 13.1.2.2).

The assessment included a desktop study and several site visits. The tools used to assist in the assessment of visual effects included ZTV maps and photomontages. While the wind farm is located entirely within Co Kerry, parts of the study area extend into both Co. Clare and Co. Limerick.

Receiving environment

Under the provisions of the current Kerry County Development Plan 2015-2021 the site itself lies within an area zoned ‘Rural General’ with a higher capacity to absorb development than other rural designations. Within the wider landscape, there are designated landscapes and scenic routes which are of higher value. These include an area ‘Rural Secondary Special Amenity’ located c 4.2 km to the north, and an area of Prime Special Scenic Amenity, extending along the coast to the west including Ballybunion Beach. These areas are more sensitive to development with

Prime Special Scenic Amenity areas described as 'having little or no capacity to accommodate development'.

There are several listed views/prospects within the study area. The only listed view towards the site is from the road east of Knockanore Mountain, at a distance of c 6km from the nearest turbine (Viewpoint 9). It is from an elevated scenic route and is part of the Shannon Way.

The 20km study area also includes some sections of south Co. Clare on the opposite site of the Shannon Estuary. The coastline includes an area of Heritage Landscape, near Kilrush and includes Scattery Island c 10.8km north of the proposed development. These areas are described in the Clare Co. Development Plan 2017-2023 *as 'areas where natural and cultural heritage are given priority and where development is not precluded but happened more slowly and carefully'.*

The Clare Co. Development Plan lists a number of scenic routes, some of which will experience visibility. The closest scenic route is Route 19, along the coast road between Kilrush and Moneypoint, where views are in the direction of the proposed development. The power station and pylons in the area are described as a major detractor on the Shannon. There are sensitive/scenic areas to the east of the power station at Clonderlaw Bay.

The study area also extends into Co. Limerick. There are two protected views within the 20km study area, both of which are in the opposite direction to the proposed windfarm and are not considered further. There are LCA's to the east and southeast of the proposed windfarm within Co. Limerick which are 'open to consideration' for wind energy development.

Under the current Renewable Energy Strategy for Co Kerry the site is located with *LCA 4: Inner River Plain*, which is described as *an inhabited open landscape which is generally flat, with no particular qualities, the most remarkable feature being Knockanore Mountain to the west*. The site is not affected by any amenity designations and is described as being *'heavily influenced by human activity over long periods associated with turf cutting and forestry plantation'*. The site is located within part of the LCA which is identified as an area where there is scope for further consideration of wind farm proposals.

The EIAR (Section 13.2.1.4) considers the Wind Energy Guidelines and the guidance provided on aesthetic considerations including siting and design. Although

the site of the turbines is peatland it is not considered to have the characteristics of Flat Peatland which relates to large scale peatlands, some of which were used for peat harvesting. The site is considered to have qualities of both Hilly and Flat Farmland, and to a lesser extent Transitional Marginal land. The EIAR (13.2.1.4) considers the siting and design guidance for both landscape character types.

In order to assess the extent of visibility of the proposed windfarm, two Zone of Theoretical Visibility (ZTV) maps were produced. The Hub Height ZTV showing the areas where the hub and above is visible, but not areas where only blade tips are visible. The Tip Height ZTV indicates areas where any part of the turbine up to the tip of the blade is visible. The SNH Guidance[9] notes that comparing two ZTV's that separately show visibility at blade height and hub height will indicate where only the turbine blades, or part-blades, may be visible from. The Tip Height ZTV is also useful as areas not showing theoretical visibility can be described as having no potential visibility of any part of the turbine. The ZVT maps are contained in Volume 4 of the EIAR.

The Zone of Theoretical Visibility, which extends to 30km from the turbines indicate that the greatest visual effects will be experienced close to the site (within 2-3km), extending north and north-east over the Shannon Estuary into Co. Clare and southwest from the site. Visibility is restricted by areas of higher ground including Beale Hill to the northwest, the higher ground adjacent to the boundary with Co. Limerick to the east as well as the Stacks mountains to the south. There is some theoretical visibility in some towns and settlements including Ballylongford, parts of Tarbert and Listowel but this will be affected by existing built form, with visibility likely to be less than indicted on the maps.

The potential visual receptors were identified from the ZTV's and site visits and include residential clusters, scenic routes, cultural heritage sites, roads, settlements and their environs and cumulative views with other wind farms developments. The potential impacts from visual receptors are assessed in the photomontages submitted in respect of the application.

Likely Significant effects

[9] Guide to Visual Representation of Wind Farms (Scottish Natural Heritage, 2017)

The EIAR describes the potential likely significant effects of the construction and operational stages of the development on the landscape and visual amenities of the area.

Landscape Effects

The site is a relatively flat plain of bogland, marginal grassland and some conifer plantations and views in the vicinity are generally unremarkable. The landscape sensitivity in the immediate environs is considered Low to Medium.

The wider landscape has several elements which have theoretical visibility of the site and are considered higher sensitivity. These include areas designated as Secondary Amenity Areas, along the southern shores of the Shannon Estuary, including Carrig Island and along Ballylongford Creek which have a distinctive character and with good open and expansive views. Carrigafoyle castle and Lislaughtin Abbey are cultural heritage attractions in this landscape. Other sensitive receptors include the Heritage Landscape in the vicinity of the Shannon Estuary in Co. Clare extending from Kilrush to Loop Head and including Scattery Island.

During the construction stage, the landscape of the site and its vicinity will undergo a high magnitude of change associated with increased site activities in the rural landscape (tree felling, excavation, creation of peat deposition areas, construction compounds, road widening etc). The effects will be highly localised to the site and its immediate vicinity and will be Moderate and adverse.

During the operational stage, the turbines will result in a high degree of change in the local landscape. As there are many open and expansive views in the area, visibility of the turbines from the immediate surrounds will be high. There are also other wind farms in the locality which are visible from the site. The presence of an additional 12 no. turbines will result in a High magnitude of change to the landscape character of the locality. The significance of effect is considered to range from Slight to Moderate in the vicinity of the site. Turbines are already part of the landscape and will now become a more pronounced presence effect, which is assessed as adverse.

The effects on the wider landscape character will vary. Windfarms are also a feature of the wider landscape, including the identified sensitive area around Carrig Island and Ballylongford Creek. Viewpoints from this area indicate only partial visibility of the turbines and the ZTV show little visibility west of the beach at Letter. The magnitude of change is considered Low in these areas.

The sensitive landscape north and south of the area around Ballybunion will not be affected and the landscape character to the north of the Shannon Estuary is already strongly influenced by wind turbines both on the North Kerry coast and across the estuary in Co. Clare. Both sides of the estuary have extensive views across to the opposite side, and the power stations at Tarbert and Moneypoint are prominent features of the estuarine landscape. The magnitude of change is considered to be Low.

The less sensitive receptors in the wider area and the areas around settlements, that are categorised as 'Rural General' are considered to have a more robust landscape character and have a greater capacity to undergo change. The proposed development will result in a change in the number of turbines evident in the landscape.

Visual Effects

During the construction stage visual effects will be localised and will impact on residents living close to the site and road users within c 2-3km. The impacts will be temporary and short term. The effects on the wider landscape will be negligible.

The main visual effects will occur during the operational stage. The ZTV maps indicate the extent of theoretical visibility of the turbines and the photomontages indicate the nature of the visibility. A total of 20 no. viewpoints were chosen representing visual receptors at residential clusters, settlements and their environs, local/regional road network, scenic routes, cultural heritage sites and cumulative views with other windfarms.

The photomontages are presented in Volume 4 of the EIAR and their locations are shown on the ZTV maps. Tables 13.9 -Table 3.28 provides a description of each view and a summary of the visual effects is provided in Table 13.29, which are considered in more detail below in the assessment.

With regard to cumulative effects, viewpoints close to the site are likely to experience the most pronounced visual effects as there are several wind farms in relatively close proximity. Combined 'in combination' effects and 'in succession' effects are likely to arise, but sequential views may also be experienced. Cumulative visual effects resulting from the addition of the proposed turbines are not considered to be Significant' in views presenting sensitive receptors in the wider landscape.

Mitigation

Following the completion of construction, the temporary construction compounds and temporary entrance from the L-1009 on the western side of the site will be removed. Peat deposition areas in some areas will help to restore ground levels where there is an existing depression. The areas will be fenced off and allowed to revegetate naturally over a period of twelve months.

It is stated that mitigation during the operation stage is stated to be achieved through careful siting and design in accordance with the Wind Energy Guidelines, which minimises landscape and visual effects.

EIAR conclusion

The conclusion reached is that the main impacts on the landscape will occur at a local level. However, windfarms and electricity generation are features of the existing landscape. In the wider area effects are less pronounced. The Shannon Estuary, particularly the Co Clare coastline is a sensitive landscape but also an industrial one in some locations (Moneypoint).

The potential for cumulative effects will be more pronounced close to the site as there are several windfarms in relatively close proximity. Much of the sensitive designated landscapes in the immediate vicinity of the study area will not have visibility of the proposed turbines and cumulative effects at Viewpoint 3 and 4 in the area of Secondary Special Amenity closest to the site are assessed as Not Significant.

The majority of views will not be significant. Where views are assessed as significant they are highly localised. There will be no significant visual effects from any designated viewpoints/scenic routes or designated landscapes within the study area, including in Co. Clare along the Shannon estuary. In terms of cumulative visual effects, these are likely to be most pronounced close to the site as there are several windfarms in relatively close proximity. Combined, in-combination and in-succession effects are likely to arise, but sequential views will also be experienced. Cumulative visual effects resulting from the addition of the Shronowen turbines are not considered to be significant in views representing sensitive receptors in the wider landscape.

Assessment

I inspected the site and its surroundings and have had regard to the relevant chapters of the EIAR and the supporting appendices. I have visited the viewpoint locations and examined the photomontages submitted, which I consider are sufficiently representative of views in the area and adequate for the purposes of the assessment. I also had regard to the concerns raised by the observers including those raised by the planning authority.

The main issues raised relate to the visual impact of the proposed development on the landscape and visual amenities of the area, and the potential cumulative impacts when taken in conjunction with other existing/permitted windfarms and other energy developments in the area. Concerns have been expressed regarding potential impacts on protected views and the Wild Atlantic Way. It is also contended that the proposed development contravenes the objectives of the county development plan and the guidance provided in the Wind Energy Development Guidelines 2006. These matters are addressed below.

Impact on the landscape and visual amenities of the area

Viewpoint No's 10,11,12 and 14 represent views close to the site and from within c.2 km of the nearest turbine. The viewpoint locations are from along local roads where the wind turbines will be visible proximate to the site. Existing operational windfarms are visible in each of these viewpoints and the extent of visibility varies depending on distance and the screening afforded by topography and vegetation. The proposed turbines will be located closer to the road network than existing turbines and will therefore be more visible and dominant in the views. The greatest impacts will be experienced at Viewpoint 10 and 12 due to the proximity of the turbines (1.4km) and the lack of screening. I accept that the impact will be 'significant' and 'adverse'.

Viewpoint 14 is taken is taken from Guiney's Cross Road along a local road to the south of the site, with the nearest turbine located c 2.2km. The view is over a flat rural landscape which is dotted with isolated houses/farms. The foreground is dominated by electricity infrastructure with existing operational wind turbines visible in the background. The proposed turbines will be visible in conjunction with existing operational wind turbines and while they will not extend the spatial extent of turbines in the landscape, they will become the most dominant feature due to proximity to the road. Having regard to the existing altered condition of the view, I accept that the impact will be 'moderate/adverse'.

Viewpoint 15 is located to the southeast and less than 4 km from the nearest turbine. The tips of existing turbines are visible over a line of coniferous trees. Upper parts of the towers will be visible above the tree line and four of the towers will be fully visible. The proposed development will result in partial intrusion in the view but due to the low sensitivity of the landscape and the distance to sensitive receptors, I do not consider that the impact is likely to be significant. Existing operational/permitted wind turbines will largely be screened by vegetation, removing the potential for in-combination effects.

Moving further away from the site, Viewpoints 5, 6 and 7 are located within 5 km of the nearest turbine and represent views from the north. While the proposed turbines will be visible to varying extents, they are barely discernible in Viewpoint 5 (this may increase when foliage is reduced) and will not be the dominant feature in Viewpoint 6 due to the closer proximity of existing operational Leanamore turbines and electricity infrastructure. The proposed development will increase the spatial extent of turbines in the landscape from Viewpoint 7 but will appear as a tight cluster and a less dominant feature than the existing operational Leanamore turbines. The significance of visual effect is assessed as 'Moderate' in the EIAR which I consider is reasonable. The visual effect from the other locations will not be significant. The greatest potential for cumulative impacts occurs from Viewpoint 7 where the proposed turbines will be viewed in combination with the operational Leanamore windfarm.

Viewpoints 2, 9 and 13 represent views from the west at distances above 5 km. Viewpoint 2 is taken from the R551 to the northwest of the site and the tips of a small number of the turbines will is visible above existing vegetation and higher ground. I accept that the visual impacts from this location will not be significant and the potential for cumulative effects is negligible. The impacts from Viewpoint 9 is discussed below under Impacts from Scenic views and there will be no impacts from Viewpoint 13.

Viewpoints 16, 17 taken at distances of 11.5km and 5.6 km respectively southwest from the nearest turbine. Viewpoint 16 is located on the regional road (R551) to the northeast of Ballyduff village and from here the hubs of some of the turbines will be visible in the distance, but the wind farm will largely be screened by higher ground. While other operational windfarms will be visible, the potential for cumulative effects is not significant due to distance. Viewpoint 17 is located on the regional road on the outskirts of Listowel. The landscape is flat and the context is suburban. The hubs of

three of the turbines will be visible above the tree line with the remainder screened by existing trees. There will be negligible impacts on these viewpoints from either the proposed development or cumulatively with other windfarms permitted/operational in the area due to the screening afforded by buildings and vegetation.

Viewpoint 18 is taken from the north of Ballyheigue village to the northeast of the site. The view is open and long distance and existing operational windfarms are barely discernible in the distance. Due to the distance involved (25km) I accept that the proposed development either individually or cumulatively with existing/permitted wind farm development, will not result in significant effects.

Viewpoints 8 is taken from slightly elevated ground to the east of the site in Co. Limerick. The view is expansive over rural countryside terminating at Knockanore Mountain in the background and existing windfarms appear as clusters in the distance. The proposed windfarm will extend the spatial extent of turbines but having regard to distance (10.4km) and existing permitted/operational turbines in the area, I do not consider that the proposed development will be unduly dominant or create the potential for significant cumulative impacts.

Viewpoints 19 and 20 are taken from the southwest and southeast of Listowel respectively. Existing turbines are partly visible or barely discernible in the views. Due to the significant distance involved, at 12.8 km and 13.8 km respectively to the nearest turbine, no significant effects are likely to arise from the proposed windfarm either on its own or in combination with existing/permitted windfarms in the locality.

Impacts on designated landscape/scenic routes and designated views

The higher sensitivity landscapes are associated with the coastline to the north (Secondary Special Amenity Area) and west of the site (Primary Special Amenity Area). The R 551 to the west is part of the Wild Atlantic Way with Discovery Points located at Carrigafoyle Castle, Beale Strand and Ballybunion Beach.

Viewpoints 3 represents the view from the upper floor of Carrigafoyle Castle on Carrig Island to the north, which is a tourist/cultural attraction in a designated landscape. The closest turbine would be at a distance of 6.5km. From this elevated position there are clear views of the existing Tullahennel operational turbines on the ridge line. When constructed, the permitted Ballylongford turbines will also be visible from this location. In response to further information, the applicant submitted an additional photomontage from this viewpoint which indicates that no part of the

windfarm will be visible from ground level, with one turbine visible when viewed from an elevated position within the castle. I accept that the impact of the proposed development from this location will not be significant, either on its own or cumulatively with other existing/permitted development. The proposed development will not therefore detract from the visual amenities of the area or the tourism potential of the castle.

Viewpoint 4 is also taken from within the designated landscape to the north adjacent to Lislaughtin Abbey, a medieval Franciscan Friary and National Monument. Existing operational wind turbines are visible in the distance on the ridge line. The majority of the proposed windfarm will not be visible in this view, with the exception of partial visibility of 2 no. turbines through the trees. The proposed development will not therefore increase the spatial extent of the turbines in the view to any significant extent. I concur with the conclusion reached in the EIAR that the impact is Not Significant.

The most sensitive area of landscape is located c 12.6 km to the west along the coastline and includes Ballybunion Beach and the Wild Atlantic Way. The ZTV mapping indicates that the proposed wind farm will not be visible from Ballybunion Beach and there is very limited theoretical visibility of the proposed development from the Wild Atlantic Way. As noted in the applicant's response the route operates successfully and has grown in popularity without being affected by existing operational wind farms in the landscape.

The EIAR also considered impacts on landscape character and the visual amenities of adjoining counties. The coastline on the opposite side of the estuary in Co Clare includes an area of Heritage Landscape which extends west from Kilrush along the coast to Loop Head and includes Scattery Island. There are also a number of scenic routes identified within 20km of the proposed development.

The closest route is Scenic View 19 between Kilrush and Moneypoint in Co. Clare and views are in the direction of the proposed development. The view (which is presented as Viewpoint No 1 of the photomontages) is from the N67 at Ballymacronan Bay. The view is open and expansive over the estuary with existing turbines visible in the distance. The view is also impacted by the industrial nature of the Moneypoint complex to the east. The proposed windfarm will be located between existing operational/permitted wind farms and will not increase the spatial extent of

turbines in the landscape. Having regard to the distance to the nearest turbine (10.9km) and the impact created by existing/permitted turbines, I do not consider that the proposed wind farm either on its own or in combination with existing turbines will dominate or create significant additional impacts on this view.

I note that with the exception of one view, all other protected views/prospects in the vicinity are orientated away from the site and will not be impacted by the proposed development. The view, which is from a local road to the east of Knockanore Mountain, is elevated and extends over a wide and expansive landscape. It is illustrated in Viewpoint No 9 of the photomontages and is already impacted by existing operational turbines which are viewed as clusters in the landscape. The proposed development will form an additional cluster in the view and will appear as a more distant feature against the backdrop of more elevated ground to the rear. It will not increase the spatial extent of the turbines in the landscape. Having regard to the sensitivity of the view, and the presence of existing wind energy developments in the view, I accept that the significance of visual effect is 'moderate' and 'slight moderate' when taken cumulatively with other wind farms in the area.

Visual impacts of other elements of the development

The EIAR explores 2 no. grid connection options. The preferred option is to connect the proposed windfarm to a new substation station provided to the east side of the site. The alternative option involves running an underground cable from the site along the public road network to the proposed permitted Tullamore solar project c. 5.5km to the south.

From a visual amenity perspective, the proposed underground cable option would be preferrable, having no above ground expression following construction. However, there were a number of disadvantages identified including the excavation of the public road network, disruption to traffic etc.

The proposed substation would introduce a large industrial type complex into an area of rural landscape which would contain sizeable industrial electrical components and a control compound. In addition to this, 2 no. lattice towers will be provided within the site on the alignment of the 110kV transmission line.

The proposed substation will incorporate vertical elements which are more difficult to assimilate. However, the development will take place within a landscape which is

considered in the development plan to have the capacity to absorb new development and there are no designated landscapes/views or scenic routes proximate the site.

I note that the substation will be surrounded by an earth berm (4.5m) which will be planted with a mix of native trees to screen the site and its visual impact Views of the substation will be highly localised and confined to the immediate environs of the site.

Compliance with the objectives of the development plan

It is contended by Kerry Co. Council that the proposal contravenes Objective ZL-1 and ZL-5 of the county development plan. Objective ZL-1 relates to the protection of the landscape and Objective ZL-5 relates to the preservation of views and prospects identified in the development plan. I consider that these maters have been adequately addressed above.

While I accept that the proposed development will impact on the landscape, it is far from pristine and is heavily influenced by forestry plantation, turf cutting and more recently by wind energy developments. I consider that the landscape, which is not subject to any designations and is not considered to be particularly sensitive has the capacity to absorb the proposed development.

The development has the potential to impact on one protected view, where the effect either on its own, or, cumulatively with other permitted windfarms will not be significant.

Compliance with Wind Energy Development Guidelines 2006

Kerry Co. Council refer to the landscape character types outlined in the Wind Energy Guidelines and the guidance providing on siting and design. It is contended that the proposed development would fall within the ‘Flat Peatland’ landscape type with some elements of ‘Hilly and flat farmland’. In accordance with the guidance, turbines should not crowd or dominate flat peat landscape types and relate in terms of scale to landscape elements in hilly and flat farmlands.

The applicant considers that the site includes elements of ‘Hilly and Flat Farmland’ and ‘Transitional Marginal Land’. It is acknowledged (EIAR Section 13.2.1.4) that while the site itself is peatland that the majority of viewers will experience views from these two landscape character types.

Regardless of landscape character type the Wind Energy Guidelines stress the need to avoid development that would dominate or crowd the landscape. Planning

permission has been granted for a significant number of wind farms in the area, some of which are operational and others remain to be constructed. As noted in the applicants' response to further information this part of North Kerry has been prioritised for wind energy development as reflected in the zoning and policies of the current development plan, and the presence of strong grid infrastructure.

I consider that the potential for cumulative impacts has been adequately assessed in the EIAR. While it is clear from the assessment and the photomontages submitted that the proposed development will be visible in many locations and in-combination with other wind energy development and will in some cases extend the spatial extent of turbines in the landscape, these impacts generally will not result in significant visual effects. I consider that it has been demonstrated that the landscape has the capacity to absorb the proposed development without detracting significantly from the character of the landscape and the visual amenities of the area.

Impacts in combination with other energy developments

Catherine Keane & Charles Mc Carthy in their submission have raised concerns regarding the cumulative visual impact of the proposed wind farm and a permitted solar farm in the vicinity for their dwelling. They have also stated that their house is excluded from the photomontages.

Due to the low level of the ground mounted panels associated with a solar farm, visual impact is not considered to be a significant issue. I note that the proposed solar farm would be located to the south of the observers' dwelling and the proposed wind farm located to the north. The proposed developments will not be viewed in combination with each other to create the potential for cumulative impacts. I consider that the concerns raised are therefore unfounded.

The observers' submission provides a 'zoom -in' version of a section of the photomontage representing Viewpoint 14 which shows elements of the landscape larger in the frame and indicates more clearly the position of their dwelling. I note that the image presented in the applicant's photomontage was captured in September 2019 and changes would appear to have occurred in the area in the intervening period. I accept that it is not possible to include all where there is potential for visual impacts of the proposed turbines and the viewpoint locations were chosen to represent the wider context.

Conclusion

The landscape in the area has experienced significant change associated with human activity in the form of turf cutting and forestry plantation and more recent wind energy developments.

The site is not affected by any amenity designations and the proposed development will not impact significantly on any designated view or prospect either in Co Kerry or in adjoining counties (Clare and Limerick).

The proposed development will impact on one scenic route in Co Kerry. I accept that conclusion reached in the EIAR that the impact will be Moderate, as the proposed turbines will not obstruct any feature of the view and will be located on lower ground in the distance where wind energy is already a component of the view.

There is no evidence that the proposed development or existing operational wind turbines in the area have the potential to negatively impact on the Wild Atlantic Way as contended by the planning authority.

The greatest potential for significant effects occurs closest to the site in a landscape of Low to Medium sensitivity and where wind turbines are a feature of the landscape.

Contrary to the assertions made by the planning authority, potential cumulative impacts have been considered and assessed in the EIAR and in the photomontages, wireframes and ZTV mapping.

I have considered all the submissions made in relation to landscape and visual effects and I consider that the information provided in the planning application documents is sufficient to allow the impacts of the proposed development to be fully assessed. Notwithstanding existing/permitted windfarms in the area, I consider that the landscape has the capacity to absorb the development without resulting in significant adverse effects on the landscape character and visual amenities of the area.

10.13. Cultural Heritage

EIAR Summary

The potential for significant effects on cultural heritage is assessed in Chapter 14 of the EIAR. The methodology included a combination of desk top studies (using recognised data bases supported by mapping sources and aerial imagery) and site visits.

There are no recorded archaeological monuments within the application site. There are 9 no. monuments within 3 km (Fig 14-2) and these are detailed in Table 14.3 of the EIAR. The nearest monument (Megalithic structure KE006-013) occurs to the north of the site, c 670 m to the northwest of T7 and c. 200m from the site boundary. It has no surface expression. There are recorded ringforts, enclosures and an earthwork within 3km of the site.

The EIAR provides details of field surveys and targeted UAV (drone) surveys conducted at the locations of each element of the proposed development (turbines, substation and peat deposition areas, site compound, met mast and proposed grid connection). Nothing of archaeological interest was recorded. The southern limits of the zone of notification (ZON) of a recorded enclosure (KE005-0920) extends across the proposed alternative cable route (Fig 14.9). The enclosure, which has been substantially levelled, is c 17km north of the L6921 local road. There would be no impact on the monument as a result of the proposed development.

The site is not situated within a designated archaeological landscape and there are no recorded National Inventory of Architectural Heritage (NIAH) structures or Recorded Protected Structures within the site or its vicinity.

Likely Significant Effects

There is potential for the construction stage to impact on unknown subsurface archaeological features that may have survived in the underlying bogland within the site. No archaeological impacts are envisaged during the operational stage or the decommissioning stage.

Mitigation

Licensed archaeological testing is proposed in advance of groundworks. Subject to these measures, no residual effects are predicted.

EIAR conclusion

There will be no physical impact on the known recorded archaeology within the site. The proposed alternative cable route will not impact on the recorded enclosure (KE 0005092). The proposed mitigation strategy would offset potential impacts on undiscovered sub-surface archaeological features that may exists on the site.

Assessment

The planning authority considers archaeological monitoring as a mitigation measure to be wholly inadequate having regard to the location of the enclosure and the artefacts recovered during turf cutting up to the recent past. One of the observers refers to the lack of consideration of impacts on protected structures.

As noted, there are no recorded archaeological monuments or artefacts within the boundary of the site and no unrecorded sites/features were identified during the during the desk top study or field surveys. However, I accept that there is potential for as yet unrecorded sub-surface sites/artefacts to exist within the site with the potential for direct impacts on the archaeological resource during the construction stage. The applicant proposes standard best practice including pre-development archaeological testing and construction stage monitoring, which will ensure that potential impacts are effectively mitigated. I consider that the planning authority's concerns are therefore unfounded.

The site is located in a rural area and well removed from towns and settlements where the majority of buildings/structures included in the Record of Protected structures are located. There are no recorded Protected/NIAH Structures located within the windfarm site or its vicinity and this is confirmed in the planning authority's submission. I accept therefore that there is no potential for significant effects, direct or indirect on the architectural heritage of the area and I consider that the issues raised in this regard are unfounded.

Conclusion

I have considered all the submissions made in relation to cultural heritage I consider that the information provided in the planning application documents is sufficient to allow the impacts of the proposed development to be fully assessed. I am satisfied that the impacts identified on Cultural Heritage would be avoided, managed or mitigated by the measures forming part of the proposed scheme and by suitable conditions. I am, therefore, satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on the archaeological, architectural or cultural heritage of the area.

10.14. Material Assets

EIAR Summary

Material assets are discussed in Chapter 15 of the EIAR which includes an assessment of those which are considered relevant to wind farm projects and associated grid connections including roads & traffic, electricity supply & infrastructure, telecommunications & aviation, water and wastewater infrastructure , waste management and forestry resources. :

The area around the site is well connected by a network of local and regional roads. The site is accessed from the L6021 to the northeast or from the L-1091 to the west. The primary access to the site will be via a new entrance off the L6021 on the north eastern side of the site and this will be the main entrance during the construction and operational stages of the development. A second temporary access will be provided to the west on the L1009, which will be closed up following construction.

It is anticipated that the turbine components will be delivered to Foynes Port in Co Limerick and transported to the site along the national, regional and local road network (Fig 15-3). A turbine delivery route assessment is provided in Appendix 3-1 of Volume 3 of the EIAR. The majority of the proposed route has been used for the delivery of turbine component delivery to the now operational Leanamore Wind Farm. Some minor and temporary works will be required to facilitate delivery.

Baseline traffic volumes have been determined from a review of traffic volumes for the Leanamore Wind Farm and TII's automatic traffic counter data (Appendix 15-1). The 2019 typical baseline traffic volumes are provided in Table 15-2. The regional and local road networks surrounding the development site are operating within their respective rural road link capacities as are the roads in the nearest urban centres, Ballylonford, Tarbert and Listowel.

The existing 110kV Kilpaddoge to Tarbert overhead line crosses the site. A solar farm (Tullamore Solar Farm) has received planning permission c 1.5km south of the proposed wind farm and it will connect to the 110 kV overhead line via an on-site substation (Fig 15-5).

The site is located within an area of generally good TV (Soarview) coverage. Fig 15-7 shows the location of mobile network operator infrastructure in the area. Responses from telecoms operators indicate that no issues arise in terms of potential interference.

The nearest airfield is Abbeyfeale located c 20km to the southeast. Others within 50km include Shannon Airport to the northwest, Ardfert Airfield to the southwest and Kerry Airport to the south (Figure 15-8).

There is currently no wastewater or water supply infrastructure within the site. The alternative grid connection route which includes an underground cable route on the local road L6021 may impact on group water scheme pipelines. Their locations will be identified prior to construction in consultation with Irish Water and Kerry Co. Council. The construction phase will result in the excavation of material which other than peat, will be reused on site for landscaping, drainage berms and backfilling of turbine locations, where appropriate. Peat will be stored in the peat deposition areas to be provided on site.

There are some areas of coniferous forestry around the boundary of the site. Permanent felling of small areas of forestry will be required in the vicinity of T1 and T7 (Fig 15-9).

Likely Significant Effects

The construction phase is expected to take 18 months and peak traffic activity will take place over 8 months in 2023. The construction programme will require the importation of up to 30,507 loads of construction materials which will result in an increase in traffic on the local road network. Peak heavy vehicle traffic volumes generated by the delivery of the construction materials will be up to 158 heavy goods vehicles per day, both to/from the site. Highest peak hour heavy vehicle traffic volumes will be up to 13 heavy vehicles, both to/from the site. The expected peak staff will be up to 60 personnel who will generate c.60 cars and vans both to/from the site each working day outside peak traffic hours.

It is proposed to source imported stone and capping aggregates from local quarries. A total of 120 delivery vehicles will be required for the 12 turbines, which will result in temporary delays for other location traffic during the off-peak delivery periods.

A Traffic and Transportation Assessment (Appendix 15-1) and Traffic Management Plan (Appendix 15-2) supports the application. The Traffic and Transportation Assessment concludes that the N69, R551, R552, L1012 and L1021 would continue to operate within their TII and estimated rural road link AADT capacities for the predicted peak construction year 2023, peak daily volumes and the TII central growth scenario. The AADT volumes on other local roads would remain relatively low

and within estimated rural road AADT link capacities, subject to the provision of local road carriage widening, in consultation with Kerry Co Council, including the L6021 and L1009.

A Traffic Management Plan has been prepared to manage the estimated additional traffic that would be generated (Appendix 15-2 Preliminary Traffic Management Plan). A Final Traffic Management Plan will be produced at construction stage.

Along the turbine delivery route, pinch points have been identified where temporary works will be required (removal of fences, lighting poles, telecom poles, sings etc). The effect of these works is considered to be short term and not significant.

Low traffic volumes will be generated during the operational stage associated with routine maintenance which will have no significant effects. During decommission, the removal of the turbines would involve abnormal loads and will be subject to a traffic management plan to be agreed.

The proposed wind farm will be connected to the 110 kV line via an underground cable. This will require the installation of 2 no lattice towers within the existing overhead line. The connection is relatively short at 225m in length. An alternative connection has been assessed in the EIAR which would consist of a 5.5km underground cable along the L6021 local road to the previously granted solar farm to the south. The proposed development will enhance local electricity infrastructure and assist in meeting increases in electricity demand nationally by exporting electricity to the grid. The effects on grid capacity and electrical infrastructure are considered to be long-term and positive.

The proposed development is located within an area characterised by operational wind farms. It is not within any flight paths and the effects on aviation are not considered to be significant. There will be no impact on aviation radar or aviation telecommunications from the wind farm development. Mitigation measures will be agreed with IAA prior to construction.

Regarding television and telecommunications, no interference with television reception is anticipated. In accordance with standard practice, the developer will be responsible for resolving any issues in this regard. Similarly, it is not predicted that there will be any potential interference with telecoms links and should they arise they can be overcome. Suitable mitigation, if required would be carried out in consultation

with the operations provider. Effects on telecommunications assets are not considered to be significant.

No public water or wastewater utility infrastructure is required at the wind farm site. Water for on-site activities (wheel washing, dust suppression etc) will be sourced from on-site rainwater collection systems and settlement ponds. Potable water for construction staff will be imported in bulk water tanks. During operational and maintenance phases, bottled water will be provided. Portable toilets will be used during the construction stage and emptied by licensed contractors and treated in wastewater treatment plants. During the operational phase, wastewater will drain to integrated wastewater holding tanks associated with the toilet units. The stored effluent will be removed to a licensed facility for treatment and disposal. The effects of the development on water and wastewater are assessed as negligible.

Waste produced during the construction, operational and decommissioning phases of the development will be managed in accordance with the waste hierarchy. Waste produced during construction will be stored in the construction compound and taken off site to be reused, recycled and disposed to an approved facility. Any surplus soil generated through construction will be managed within the site and not be disposed off-site. Minimal amounts of waste will be generated during the operational stage and will be collected on site and transported to a licensed facility. On decommissioning 85% of turbine components can be recycled and reused. The fibreglass blades are currently disposed of to landfill. This would be a moderate negative impact of the proposed development and likely to require provision of new treatment technologies and/or facilities.

The permanent felling of a small area of forestry (c 3.15ha) is required to facilitate the construction of the turbine foundations, hardstands, access tracks and turbine assembly at turbine locations T1 and T7. Replacement forestry will be planted on lands to the northwest of the proposed development site adjacent to T7 (Fig 15-11). There will therefore be no net loss of forestry and no significant effects on the forestry resource arising from the proposed development.

No significant cumulative effects arising from the proposed development in combination with other permitted are predicted. The permitted solar farm will require little operational maintenance and there will therefore be no operational cumulative impact from this development.

Mitigation

Impacts on roads and traffic will be mitigated by the Traffic Management Plan which shall include standard measures to enhance safety, reduce delays, congestion and inconvenience to local residents and road users. It is proposed that construction delivery traffic will enter the site via the eastern entrance and exit via the western entrance to reduce two-way vehicle movements on local roads. Appropriate signage will be maintained and wheel wash and water browsers will be installed. Pre and post construction surveys will be conducted to verify the structural condition of the proposed turbine delivery route road network and a high level of communication will be maintained with the local community, local authority and business community regarding the extent and duration of the project.

No mitigation is required during the operational stages and the decommissioning phase would be similar to the construction phase, but of reduced magnitude.

The effects on grid capacity and electrical infrastructure associated with the development are assessed as long-term and positive. Any potential interference with TV signals/telecoms links can be overcome and suitable mitigation, if required, would be carried out in consultation with the telecommunications provider.

The developer shall comply will the standard requirements of the IAA with regard to the provision of aeronautical obstacle warning lights, details of as-constructed coordinates and inform the IAA of intention to commence crane operations at least 30 days prior to turbine erection.

Waste will be stored in accordance with best practice protocols and managed in accordance with the waste hierarchy.

Replacement forestry will ensure that there is no loss of trees associated with the proposed development.

Following the implementation of the mitigation measures, no significant residual impacts on material assets are predicted.

EIAR conclusion

The EIAR concludes that the proposed wind farm including the underground grid connection and on-site substation is unlikely to constitute a significant adverse impact to material assets in the vicinity of the proposed development.

The operation of the turbines will make a positive contribution to the supply of renewable energy and a reduction in the use of fossil fuels.

Assessment

The planning authority raised concerns regarding the long-term impacts on the road network, stating that there is no provision for the protection or remediation of the road network during the construction and operational phases of the development. The observers have concerns regarding the potential of obstruction and delays caused by construction traffic.

The potential for significant effects on the road network will only occur during the construction stage and it is accepted by the applicant that heavy vehicle traffic volumes generated by construction could result in damage to the road network. To mitigate such effects, it is the intention of the applicant, as clearly identified in the EIAR, to carry out pre and post condition surveys to identify any damage, which will be repaired to the satisfaction of Kerry Co. Council. This is standard best practice mitigation and will ensure that the condition of the road network is restored following the completion of the development.

The construction stage will result in increases in traffic on the local road network in the vicinity of the site. It is likely to result in traffic controls including temporary road closures, temporary traffic lights, stop/go systems etc which may inconvenience other road users. Should the underground grid connection route option be selected, road closures will be implemented on a rolling basis where there is insufficient space to implement a lane closure.

To reduce two-way construction vehicle movements on local roads, it is proposed that all general construction vehicles would enter the site via the eastern access on the L6021 and exit the site via the western access on the L1009 (Fig 15-10). To minimise effects on local residents and road users, deliveries to the site will be scheduled not to coincide with the period when use of the public road will be at its peak for local residents

While I accept that the increases in traffic, the potential restrictions relating to lane/road closures and the transport of abnormal sized loads on the road network may cause inconvenience and a degree of annoyance to local residents and those using the road network on a regular basis, these impacts will be temporary and relatively short lived and will be managed in accordance with a Traffic Management

Plan to be agreed with Kerry Co. Council. I accept that these impacts will be reduced by the mitigation measures outlined above, which are standard best practice for this type of development.

In response to issues raised by the Irish Aviation Authority, the applicant completed an assessment to establish any potential adverse effects the proposed windfarm is likely to have on aviation procedures. The report which is contained in Appendix 5 of the response to further information states that no adverse effect will arise.

I consider that the issues raised with regard to potential interference with TV and telecommunications has been satisfactorily addressed in the EIAR. The applicant consulted with national broadcaster and mobile telephone operators and no issues were identified. In accordance with standard practice, a signed Protocol between the developer and RTE will be put in place, in which the developer will be responsible for resolving any issue of interference with television reception as a result of the proposed development.

Conclusion

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 impacts identified would be avoided, managed or mitigated by measures forming part of the scheme, by the proposed mitigation measures and with suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on material assets in the area.

10.15. Interactions

I have considered the interrelationships between factors and whether these may as a whole affect the environment, even though the effects may be considered acceptable on an individual basis. A matrix of the impact interactions is provided in Table 16-1 of the EIAR. While all environmental aspects can be inter-related to some extent, this chapter highlights the most prominent. A small number of major interactions are identified, and a greater number of minor interactions indicated. The implementation of the mitigation measures proposed for each environmental factor as detailed in the individual chapters of the EIAR will reduce/remove the potential for effects.

I have considered the interrelationships set out in Chapter 16 and I am satisfied that effects as a result of interactions, indirect and cumulative effects can be avoided, managed and/or mitigated for the most part by the measures which form part of the proposed development, the proposed mitigation measures detailed in the EIAR and with suitable conditions.

11.0 Appropriate Assessment

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.

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) and Part XAB of the Planning and Development Act, 2000, as amended.

Stage 1 – Screening for Appropriate Assessment

The first test of Article 6(3) is to establish if the proposed development could result in likely significant effects to a European site. This is considered Stage 1 of the appropriate assessment process i.e., screening. The screening stage is intended to be a preliminary examination. If the possibility of significant effects cannot be excluded on the basis of objective information, without extensive investigation or the application of mitigation, a plan or project should be considered to have a likely significant effect and Appropriate Assessment carried out.

The applicant carried out an appropriate assessment screening exercise, which is contained in Appendix 2 of the Natura Impact Statement (NIS). The screening report considers all European sites within a 15km radius of the development site (Fig 31), in addition to sites outside the 15km zone that may be significant impacted. It concluded that 4 no. sites, had the potential to be impacted by the proposed development. These include:

- Lower River Shannon SAC (Site code:002165), c. 6 river km to the north
- River Shannon and River Fergus Estuaries SPA (Site code: 004077), c 2.7 linear km from northern boundary and 6km downstream.
- Moanveanlagh Bog SAC (Site code: 002351), c 5.4km to the southeast
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mountain Eagle SPA (Site code 004161), c 8.6km to the east.

The Screening Report identifies the potential impacts of each phase of the development and provides an assessment of whether these impacts could result in significant effects on the 4 no. European sites identified, in view of the sites' conservation objectives. The main potential impacts would arise from habitat loss or alteration, habitat/species fragmentation, disturbance and/or displacement of species and deterioration in water quality.

While the site is located outside the boundaries of the Lower River Shannon SAC and the River Shannon & River Fergus Estuaries SPA, there is hydrological connectivity between the development site and both European sites. The potential for significant effects on the European sites cannot therefore be excluded.

Moanveanlagh Bog SAC is situated c 5.4km from the development site and is selected for 3 no. bog habitats All are ombrotrophic bog habitats (their principal supply of water and nutrients is from rainfall) that are not structurally or functionally dependent on surface or groundwater flows. They are therefore isolated from impacts arising from the proposed development. The Screening Report concludes that there is no potential for direct/indirect effects on the qualifying habitats of the SAC due to the separation distance and because no plausible pathway exists that could transmit significant water quality impacts from the proposed development site to the SAC. It also considers cumulative effects with other plans/programmes and concludes that is no potential for the generation of significant in-combination effects. This would appear reasonable.

The Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA lies 8.6km to the east and is selected for Hen Harrier. It is noted in the Screening Report that while the site is beyond the 2km core, breeding season, foraging range (SNH, 2016) for this species, it is within the maximum foraging range.

The species was recorded within the development site, but the number of observations was noted to be low, consistent with occasional use of the site for foraging or commuting rather than a sustained presence at the site. The Screening Report concluded that due to the location of the site at the most outward foraging extent for Hen Harrier and its low presence on the site, the species was not likely to be exposed to significant effects

The overall conclusion reached in the AA Screening Report is that it is not possible to rule out the potential for significant effects on the following 2 no. European sites:

1. Lower River Shannon SAC
2. River Shannon and River Fergus Estuaries SPA

It is also concluded that the proposed development, individually or in combination with other plans or projects would not be likely to have a significant effect on Moanveanlagh Bog SAC (Site code 002351) or the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code 004161) in view of the site(s) conservation objectives and Appropriate Assessment is not therefore required for these sites.

However, the NWPS raised issues regarding a winter hen harrier roost site within the proposed development boundary which it noted had been used for several years, including during winter 2020/21. The NPWS noted the importance of such wintering roost sites to the breeding populations of the Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code: 004161) and stated that the roost site needed to be assessed.

In response to further information the applicant commissioned additional roost surveys between October 2021 and March 2022 and a roost site was identified on the western edge of the proposed development site. While the roost site is not located within the SPA, it is subject to protection as an ex-situ roosting habitat or area for an Annex 1 species under the Birds Directive. The presence of the wind farm has the potential to impact on the roost site during both the construction stage and the operational stage of the wind farm. Based on this updated information, I conclude that as the possibility for significant effects cannot be ruled out to The Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code: 004161), it must be screened in for further assessment.

Conclusion – Stage I Screening Report

It is therefore reasonable to conclude that on the basis of the updated information on the file, which I consider adequate in order to issue a screening determination, that the proposed development, individually or in combination with other plans or projects would not be likely to have a significant effect on the Moanveanlagh Bog SAC (Site code 002351), in view of the site's conservation objectives and Appropriate Assessment is not therefore required for this site.

I would conclude that it is not possible to rule out the potential for significant effects on the following 3 no. European sites:

1. Lower Shannon SAC (Site 002165)
2. River Shannan & River Fergus Estuaries SAC (Site code 004077)
3. Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code 004161).

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

The Natura Impact Statement

The application is accompanied by an NIS which describes the proposed development, the project site and the surrounding area. The NIS outlines the methodology used for assessing potential impacts on the habitats and species within the European Sites that have the potential to be affected by the proposed development. It predicts the potential impacts for these sites and their conservation objectives, 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. The NIS is supported by the additional information received by the Board on May 11th, 2022.

The NIS was informed by the following studies, surveys and consultations:

A desk top study was carried out to collate information on the site's natural environment. This included a review of the following publications, data and data sets:

- OSI Aerial photography and 1:50000 mapping.
- National Parks and Wildlife Service (NPWS).

- National Biodiversity Data Centre (NBDC) on-line map viewer.
- BirdWatch Ireland.
- Teagasc soil area maps.
- Geological Survey of Ireland (GSI) area maps.
- Environmental Protection Agency (EPA) water quality data.
- Shannon River Basin District data sets (Water Framework Directive).
- Other information sources referenced in the report.

Field surveys were conducted which including extensive walkover habitat surveys and vantage point bird surveys that commenced in October 2018.

Consultations with An Taisce, Bat Conservation Ireland, BirdWatch Ireland, Irish Wildlife Trust, Department of Culture, Heritage and the Gaeltacht, Geological Survey of Ireland, Inland Fisheries Ireland and the Irish Peatland Conservation Council.

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 impacts, and uses best scientific information and knowledge. Details of mitigation measures are provided in Section 7 of the NIS and in the additional information received by the Board on May 11th, 2022. I am satisfied that the information is sufficient to allow for appropriate assessment of the proposed development (see further analysis below).

Appropriate Assessment of implications of the proposed development

The screening assessment concluded that potential pathways for significant effects existed between the proposed development and 2 no. European sites and that further assessment was therefore required in respect of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. On the basis of the additional information received which identified a hen harrier roost site within the development area, the Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA has also been brought forward for assessment.

The potential for significant effects could arise from hydrological connectivity resulting in indirect effects on habitats/species of conservation interest arising from a deterioration of water quality due to run-off of silt, hydrocarbons, cementitious material and other pollutants during construction, operation and decommissioning.

Significant effects could also arise from disturbance and displacement as a result of construction and collision risk associated with the operation of the turbines which could also pose a significant risk to species of conservation interest in the SPA's.

The following is an objective scientific assessment of the implications of the project on the relevant conservation objectives of the European sites' using the best scientific knowledge in the field. All aspects of the project which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are examined and assessed.

Relevant European sites

A description of the 3 no. sites brought forward for Appropriate Assessment and details of their Qualifying Interests (QI)/Special Conservation Interests (SCI) and the distance from the development site are set below.

European site (SAC/SPA)	Qualifying Interests	Distance
Lower River Shannon SAC (Site code: 002165)	• Sandbanks • Estuaries • Tidal Mudflats and Sandflats • Coastal Lagoons* • Large Shallow Inlets and Bays • Reefs • Perennial Vegetation of Stony Banks • Vegetated Sea Cliffs • Salicornia Mud • Atlantic Salt Meadows • Mediterranean Salt Meadows • Floating River Vegetation • *Molinia* Meadows • Alluvial forests* • Freshwater Pearl Mussel • Sea Lamprey • Brook Lamprey • River Lamprey • Salmon • Bottle-nosed Dolphin • Otter	2.7 linear km from northern boundary 6km downstream

European site (SAC/SPA)	Qualifying Interests	Distance
River Shannon and River Fergus Estuaries SPA (Site code: 004077)	• Cormorant • Whooper Swan • Light-bellied Brent Goose • Shelduck • Wigeon • Teal • Pintail • Shoveler • Scaup • Ringed Plover • Golden Plover • Grey Plover • Lapwing • Knot • Dunlin • Black-tailed Godwit • Bar-tailed Godwit • Curlew • Redshank • Greenshank • Black-headed Gull • Wetlands and Waterbirds	2.7 linear km from northern boundary 6km downstream
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code 004161)	• Hen Harrier	c 8.6km to the east

(* = Priority)

No viable source pathway receptor links were identified to any other European site.

1. **The Lower River Shannon SAC (Site code 002165)**

The site synopsis (NPWS) describes the site as follows:

'This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/Kerry Head, a distance of 120km. It encompasses the Shannon, Feale

Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head.

The site is of great ecological interest as it contains a high number of habitats and species listed on Annexes 1 and 11 of the E.U Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish Lamprey species. A good number of Red Data Book species are also present. A number of species listed in Annex 1 of the EU Birds Directive are also present, either wintering or breeding'.

Site specific conservation objectives have been published for the site which is *'to maintain/restore the favourable conservation condition of the habitats and species for which the site is selected'.*

2. **The River Shannon & River Fergus Estuaries SPA (Sire code: 004077) The**

The site synopsis (NPWS) describes the site as follows:

'*The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick city westwards as far as Doonaha in Co. Clare and Doneeen Point in Co. Kerry. The site has vast expanses of intertidal flats which contain a diverse macro-invertebrate community which provides a rich food resource for wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for wintering birds. Elsewhere in the site the shoreline comprises stony or sandy beaches.*

The SPA is an international important site that supports an assemblage of over 20,000 wintering birds. It holds internationally important populations of four species i.e., Light-Bellied Brent Goose, Dunlin, Lapwing and Redshank. There are 17 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of these species which occur regularly are listed on Annex 1 of the E.U. Birds Directive, i.e., Whooper Swan, Golden Plover and Bar-tailed Godwit.

Site specific conservation objectives have been published for the site, *'To maintain the favourable conservation condition of each species for which the site is selected*

and to maintain the favourable conservation condition of the Wetlands as a resource for the regularly-occurring migratory waterbirds that use the site'.

3. The Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

The SPA is a stronghold for Hen Harrier and supports the largest concentration of the species in the country. It is noted to provide excellent nesting and foraging habitat for breeding Hen Harrier. Site specific conservation have not been published for the site and the generic objective is '*To maintain or restore the favourable conservation condition of bird species listed as Special Conservation Interests of the SPA.*

Potential for significant effects on European sites

The development site is hydrologically connected to both the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA via a tributary of the Galey River to the south of the site, which outfalls to the Cashen River and ultimately to the mouth of the Shannon south of Ballybunion. The Galey River is part of the SAC. The Ballyline River and a network of its tributaries extend from north of the site and outfall to the River Shannon downstream of Ballylongford. The Ballyline River is not within the SAC but there is hydrological connection to both the SAC/SPA via Ballylongford Bay. There is potential for impacts on The Stacks to Mullaghareirk Mountains, West Limerick hills and Mountain Eagle SPA associated with the removal of roost/roost habitat within the development site and ex-situ displacement/disturbance effects on hen harrier, which is a SCI for the SPA.

The likelihood of significant effects on the conservation objectives of the SAC and SPA's, as a result of the proposed development either individually, or in combination with other plans/projects is assessed in the NIS and in the additional information submitted by the applicant on May 11th, 2022 and is based on the following indicators:

- habitat loss or alteration
- water quality and resource
- disturbance and or displacement of species
- habitat or species fragmentation

- collision risk and disturbance to birds during the operational stage.

Habitat loss or alteration

There is no potential for direct habitat loss on either the SAC or the 2 no. SPA's as a result of the proposed development, which is located at a distance from, and does not overlap with any of the European sites. There is potential for indirect habitat loss or alteration effects on the SAC and the River Shannon and River Fergus Estuaries SPA arising from potential water quality impacts associated with the proposed development.

There is potential for removal/destruction of suitable roosting habitat for Hen Harrier which are a SCI for the Stacks to Mullaghareirk, West Limerick Hills and Mount Eagle SPA during construction.

Water quality and resource

The construction stage will require heavy engineering and excavation and the potential for sediment and other pollutants to enter the surface water system, with potential impacts on the QI's and SCI's for which the sites are selected.

The Lower River Shannon SAC is selected for 14 Annex 1 habitat types, two are noted to be exclusively terrestrial in distribution, one is riparian habitat and the remaining eleven are coastal/marine. The River Shannon & River Fergus SPA is selected for a non-annexed habitat and species complex Wetland and Waterbirds.

The NIS examines each habitat individually to determine if they are likely receptors of effects resulting from water quality impacts. It considers the distribution of the habitats within the SAC and the potential for significant effects on the integrity of the European sites having regard to the Attributes and Targets that must be met to ensure maintenance of the habitat's favourable conservation status.

None of the 11 no. coastal and marine habitats are expected to be adversely impacted by water quality impacts arising from the proposed development. This arises due to the significant distance between the site and the outflows of both the Cashen River (24km) and the Ballyline River (6km), the assimilative character of the intervening river systems and the character, magnitude, duration or intensity of the water quality impacts identified. Furthermore, it is noted that many of these habitats are subject to natural processes and fluctuations in sediment deposition rates associated with tidal flows and the dynamics of the estuarine system.

The NIS concludes that these Annex 1 habitats are not likely receptors of effects resulting from water quality impacts and no changes in the conservation condition beyond what reasonably be envisaged under natural processes is foreseeable.

Floating River Vegetation is the only freshwater habitat which is a qualifying interest of the SAC. It is located upstream of Limerick city and at a significant distance from the outflow of the Cashen and Ballyline Rivers, which drain to the SAC. Having regard to the distribution of this habitat type and the absence of any plausible impact pathway, it is concluded that this habitat is not a likely receptor of effects from potential water quality impacts associated with the proposed development.

As a terrestrial habitat *Molinia* Meadows, there is no pathway for effects resulting from water quality impacts associated with the proposed development. The distribution of Alluvial forests is restricted to areas upstream of Limerick city. In the absence of any plausible pathway there is no potential for water borne impacts from the development site to the locations where this Annex 1 is distributed and accordingly there is no potential for significant effects.

The River Shannon and River Fergus Estuaries SPA is selected for Wetland and Waterbirds. A potential impact pathway exists between the proposed development site and the SPA via the Ballyline River that flows into the SPA. Having regard to the conclusion reached above regarding the qualifying habitats of the SAC (separation distance, assimilative capacities of intervening river system, tidal processes), no significant effects are predicted for this habitat type.

The conclusion reached in the NIS is that none of the Annex 1 habitats for which the SAC is selected or the Wetlands associated with the SPA are likely to be adversely affected by water quality impacts associated with the proposed development. However, it is recognised that in the absence of mitigation there is potential for indirect disturbance or displacement of qualifying species associated with ingress of sediment, fuel, oil, sediment which could result in a reduction in water quality and available prey items.

Disturbance and/or Displacement of Species

The Lower River Shannon SAC is selected for seven qualifying species. Freshwater Pearl Mussel is confined to the Cloon River catchment in Co. Clare. Having regarded to the restricted distribution of the species within the SAC and the absence of a pathway for effects, no significant adverse effects on the species are predicted.

The SAC is selected for sea, river and brook lamprey species and salmon all of which rely on clean gravel and good water quality. The resident populations of sea and river lamprey for which the SAC is selected have freshwater juvenile phases and marine adult phases. Their distributions, therefore, may include the river systems and the marine component of the SAC. Brook lamprey is exclusively freshwater. Salmon is an anadromous species living initially in freshwater before migrating to the sea.

In the absence of mitigation there is potential for pollutants to enter the surface water system with impacts on water quality. This has the potential to result in habitat loss or alteration impacts to non-annexed habitat that support the structure and function of the resident population of these species which could result in indirect disturbance and/or displacement effects.

Bottlenose Dolphin is exclusively marine in its distribution and while this includes the estuarine waters seaward of the mouth of the Cashen River and Ballylongford Bay, the influence of tidal flow and diluting capacity of the estuary preclude the potential for water borne impacts from exerting an influence on resident populations of Bottlenose Dolphins for which the SAC is selected.

There will be no loss of high value habitat within the SAC or the development site that would result in direct impacts on Otter. There is potential for disturbance/displacement effects during construction associated with noise and human activity. However, as construction will take place during the day (otter is nocturnal) and will not take place in any one location for a significant duration, these impacts are not likely to be significant. There is potential in the absence of mitigation for indirect impacts associated with impacts on water quality and a reduction in prey resources

The River Shannon and River Fergus Estuaries SPA is selected for a resident population of Cormorant and the migratory, overwintering populations of 21 other species. None of the species were observed on the development site during the two-year bird surveys conducted on the site.

Table 23 of the NIS indicates that the species for which the SPA is selected are associated with, and reliant, to varying extents on tidal, intertidal and estuarine habitats. The habitats on the development site are entirely terrestrial and do not provide suitable habitat to support these species. Table 23 also indicates the

specialised foraging strategies of the designated species and the highly specific prey requirements which limit their capacity to use alternative sites and will rarely move (with the exception of Whopper swan) for sustained periods to areas not contiguous with the coast. Populations of qualifying species are expected to continue to preferentially select the habitats of higher ecological value abundantly available with the SPA designated for their protection in preference to any of those within or in proximity to the proposed development site.

Having regard to the information on species' behaviour (Table 23) and the data collected during the site surveys, which is consistent with the species behaviour, it is concluded that none of the species are expected to be present in the area of the proposed development in numbers and they will not be likely to be exposed to significant behavioural displacement effects, due to habitat loss impacts during the construction phase of the development. Similarly, populations are not expected to be present at or close to the proposed development site in numbers that would result in significant displacement/disturbance effects

During the operation stage there is potential for impacts on SCI species of the River Shannon and River Fergus Estuaries SPA associated with behaviour displacement due to habitat loss, contiguous wind turbines and noise from wind farm operations/ maintenance and mortality due to collision. However, having regard to the unsuitability of the habitats on the development site, the behavioural constraints of the SCI species outlined above and the results of the site surveys, it is concluded that none of the species is likely to be present on the site in sufficient numbers to be exposed to risk of significant effects.

The decommissioning phase works will be of reduced magnitude and scale than those required during construction and it is therefore concluded that SCI species are not likely to be exposed to significant disturbance/displacement effects.

The Stacks to Mullaghareirk, West Limerick Hills and Mount Eagle SPA is designated for one Annex 1 species Hen harrier. There is potential for disturbance of the roost during the construction and operational stages of the development and mortality during collision.

Habitat or Species Fragmentation

In the absence of mitigation there is potential for indirect habitat/species fragmentation effects on designated species of the Lower River Shannon SAC and

the River Shannon and River Fergus SPA associated with a deterioration in water quality.

Collision and Disturbance to roosting birds during the operational phase

The observations of the roost area during the surveys showed that birds approach the roost typically within 3m of ground level. At this level Hen harrier would not fall within the blade swept area which is 14m above ground level. The collision risk is therefore assessed as negligible. It is recognised that the operation of the wind farm has the potential to disturb the use of the roost but no significant disturbances are likely to arise at 500m or more from the identified roost.

In combination effects

This section of the NIS considers the potential for the proposed development to act in combination with other plans and projects to create significant effects on the European sites.

No in-combination impacts are predicted with the plans detailed in the NIS as each have safeguards to protect the natural environment and European sites, which will also apply to the proposed development.

The NIS considers a range of existing/proposed developments and land uses (peat extraction, agriculture), other windfarms, solar farm and EPA licenced facilities. (sewage treatment plants) for potential cumulative effects. The overall conclusion reached is that while there is limited potential synergistic interaction between the proposed windfarm and other projects/activities that would create in-combination effects, without an adequate programme of mitigation measures to prevent adverse water quality impacts, that adverse cumulative impacts could arise between the proposed development and other projects/activities identified.

Mitigation

Mitigation will be achieved in the first instance by design and the development will be confined to the development footprint with no habitat removal or movement/storage of machinery or other construction related activity outside the development boundary. All of the mitigation measures will be incorporated into the project design and in the final CEMP. A project Ecologist will be employed on site for the duration of the construction phase to ensure that all of the mitigation measures are fully implemented.

The worst case scenario is identified as a significant ingress of sediments to the Galey River or the Ballyline River or a small or medium scale spillage of a pollutant, which could have a significant negative effects on downstream riparian, estuarine and marine environments and the species they support. Many of the mitigation measures are therefore designed to protect water quality and prevent sediment and other pollutants from entering the water environment. These measures which are standard and proven best practice cover all aspects of the construction phase including (soil stripping, excavation works, dewatering, soil stripping, storage and stockpiles, concrete management, materials handling, management of fuel, oils and refuelling operations, road maintenance/wheel wash facilities and biosecurity and invasive species management).

The site drainage system is designed integrally with the windfarm layout as a measure to ensure that the proposal will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchment from wind farm related sediment runoff. The drainage system has been described above in Section 9.8 (Water) and is not therefore repeated here.

However, a fundamental principle of its design is to separate clean water from that contaminated by the works. This will be achieved by intercepting the clean water and conveying it to the downstream side of the works areas, which will reduce the volume of water requiring treatment. The dirty water from the works will be treated in a separate drainage system and treated by removing suspended solids before discharging it to the downstream watercourse over vegetated ground. Flood attenuation measures will also be incorporated into the design to manage rates of run-off and reduce flood risk. The peat deposition areas will have a 50m buffer from OSi mapped watercourses to mitigate against any risk of siltation. These will be restored as quickly as possible when filling is completed so that vegetation can be re-established and the areas stabilised.

During the operational stage the amount of on-site traffic and excavation work will be negligible and there will be no particular risk of sediment run-off. However, the drainage infrastructure will be retained which will ensure that runoff continues to be attenuated and dispersed across existing vegetation before reaching the downstream receiving waters.

During the decommissioning phase mitigation measures will be implemented to ensure that pollutants and sediments are not transferred to either the Galey or the Ballyline rivers by surface water flow.

Specific measures are proposed to mitigate impacts on the winter hen harrier roost site located on the western edge of the site. A 500m set back distance between the roost site and the turbines/infrastructure is adopted based on guidance for nesting birds, when birds are most sensitive to disturbance. This will result in T1 and T2, located 408m and 336m respectively from the roost site being omitted from the development, together with associated infrastructure and temporary site compound No 2

To further mitigate impacts on the roost location, it is proposed to implement a land management plan which will preserve the roost location for the duration of the life of the proposed windfarm. Operational phase monitoring will be conducted of the roost site between October to March for years 1 to 5 and roost survey monitoring of the remainder of the wind farm site will be conducted pre-construction and during the construction phase. These measures are considered acceptable by the DAU to ensure the protection and preservation of the roost location.

Conclusion on Appropriate Assessment

Having carried out Screening for Appropriate Assessment (Stage 1) of the project, it has been concluded that the project individually, or in combination with other plans or projects, has the potential to have a significant effect on three European sites in views of the Conservation Objectives of those sites, and Appropriate Assessment is therefore required for the following:

- Lower River Shannon SAC (Site code 002165)
- River Shannon and River Fergus Estuaries SPA (Site code 004077)
- The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code 004161).

Following an Appropriate Assessment (Stage 2), it has been ascertained that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the Lower River Shannon SAC (Site code 002165), the River Shannon and River Fergus Estuaries SPA (Site code 004077), the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA

(Site code 004161) or any other European site, in view of the sites' Conservation Objectives. This conclusion is based on a full and detailed assessment of all aspects of the proposed project including proposed mitigation measures and assessment of in-combination effects with other existing and permitted plans and projects.

Conclusion

Having regard to the nature of the proposed development and the mitigation measures proposed, the information presented with the application, including the Natura Impact Statement and further information received by the Board, which I consider is adequate to carry out an assessment of the implications of the proposed development on the integrity of European sites, I consider that it is reasonable to conclude that the proposed development, individually or in combination with other plans and projects would not adversely affect the integrity of the Lower River Shannon SAC (Site code 002165), the River Shannon and River Fergus Estuaries SPA (Site code 004077) and The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code 004161).or any other European sites, in view of the sites' Conservation Objectives. There is no reasonable doubt to the absence of such effects.

12.0 Recommendation

Having regard to the foregoing, I recommend that planning permission be granted for the proposed development for the reasons and considerations set out below, subject to compliance with the attached conditions and in accordance with the following Draft Order.

13.0 Reasons and Considerations (Draft Order)

In coming to its decision, the Board has regard to the following:

(a) national policy including the Climate Action Plan 2021, with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases,

(b) National Peatlands Strategy 2015-2025,

(c) Regional Spatial and Economic Strategy for the Southern Region 2020,

(d) ‘Wind Energy Guidelines-Guidelines for Planning Authorities’ issued by the Department of the Environment, Heritage and Local Government in June 2006, and the Draft Wind Energy Guidelines published by the Department of Housing Local Government and Heritage in December 2019.

(e) the relevant policies of the planning authority as set out in the Kerry County Development Plan 2015-2021,

(f) the character of the landscape in the area and the absence of any ecological designation on or in the immediate environs of the wind farm site,

(g) the characteristics of the site and of the general vicinity,

(h) the pattern of existing and permitted development in the area, including other wind farms,

(i) the distance to dwellings or other sensitive receptors from the proposed development,

(j) the environmental impact assessment report,

(k) the Natura impact statement,

(l) the submissions made in connection with the application and the responses to further information, and

(m) the report of the Inspector.

Appropriate Assessment: Stage 1

The Board noted that the proposed development is not directly connected with or necessary for the management of a European Site.

In completing the screening for Appropriate Assessment, the Board accepted and adopted the screening assessment and conclusion reached in the Inspector’s report that the Lower River Shannon Special Area of Conservation (Site code 002165), the River Shannon and River Fergus Estuaries Special Protection Area (Site Code 004077) and The Stack’s to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle Special Protection Area (Site code 004161) are the only European sites for which there is a possibility of significant effects and which, must therefore be subject to Appropriate Assessment.

Appropriate Assessment: Stage 2

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposed development for the European Sites in view of the Sites' Conservation Objectives namely the Lower River Shannon Special Area of Conservation (Site code 002165), the River Shannon and River Fergus Estuaries Special Protection Area (Site Code 004077) and The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle Special Protection Area (Site code 004161). The Board concluded that the information before it was adequate to allow for a complete assessment of all aspects of the proposed development and to allow them reach complete, precise and definitive conclusions for appropriate assessment.

In completing the Appropriate Assessment, the Board considered, in particular, the following:

i. the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,

ii. the mitigation measures which are included as part of the proposal,

iii. the conservation objectives for the European Sites' and

iv. the views contained in the submissions.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspectors report in respect of the potential effects of the proposed development on the integrity of the aforementioned European Sites', having regard to the sites' Conservation Objectives.

In overall conclusion, the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the sites' Conservation Objectives and there is no reasonable doubt remaining as to the absence of such effects.

Environmental Impact Assessment:

The Board completed an environmental impact assessment of the proposed development taking account of:

(a) the nature, scale, location and extent of the proposed development,

(b) the Environmental Impact Assessment Report and associated documentation submitted in support of the planning application, including the further information,

(c) the submissions received during the course of the application, and

(d) the Inspector's report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the planning application.

Reasoned Conclusions on the Significant Effects

The Board considered that the main significant direct and indirect effects of the proposed development on the environment are, and would be mitigated, as follows:

- **Population and Human Health:** Noise, vibration and shadow flicker during the construction and/or the operational phases would be avoided by the implementation of the measures set out in the Environmental Impact Assessment Report (EIAR) and the Construction and Environment Management Plan (CEMP).
- **Biodiversity:** Habitat loss associated with construction will impact on habitats of generally low ecological value with no rare or protected species recorded**.** Potential impacts to habitats and faunal species, aquatic fauna and invertebrates, avian species and bats would be mitigated by the implementation of the measures during the construction and/or operational phases set out in the Environmental Impact Assessment Report
- **Landscape and Visual**: Localised visual impacts will occur primarily from in proximity to the site and from local properties. The impact of the development coupled with existing and permitted windfarms in the vicinity, will have a cumulative impact on the landscape and the visual amenities of the area. These impacts will not be avoided, mitigated, or otherwise addressed by

means of condition. The impact is balanced by the nature of the cutover bog landscape, which has been significantly impacted by existing activities (agriculture, forestry and peat extraction) and which is robust.

- **Hydrology and Hydrogeology**: Impacts to the water environment would be mitigated by the implementation of the measures set out in the Environmental Impact Assessment Report, the Construction and Environment Management Plan and the Surface Water Management Plan. The proposed surface water management system would be integrated with the existing bog drainage system, with additional treatment and attenuation provided.
- **Lands and Soil**: The risk of peat stability erosion during construction and operation phases would be mitigated by the implementation of the measures set out in the Environmental Impact Assessment Report, the Construction and Environment Management Plan and the Peat and Spoil Management Plan.
- **Climate:** Impacts are assessed as positive associated with the generation of renewable energy.
- **Cultural Heritage**: The potential impacts on cultural heritage would be mitigated by archaeological monitoring with provision made for resolution of any archaeological features/deposits that may be identified.
- **Material Assets** (Roads & Traffic) will be mitigated during construction by the measures set out in the Environmental Impact Assessment Report and a Traffic Management Plan. The main impacts will occur during the construction stage which will be short-term and temporary. Impacts during the operational stage would be negligible.

The Board is satisfied that the reasoned conclusion is up to date at the time of making the decision.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed as set out in the EIAR, and subject to compliance with the conditions set out below, the effects of the proposed development on the environment, by itself and in combination with other plans and projects in the vicinity, would be acceptable. In doing so, the Board adopted the report and conclusions of the Inspector.

Having considered the totality of the Environmental Impact Assessment Report, associated documentation submitted with the application and the report of the Inspector, the Board concluded that any likely significant effects on the environment would be mitigated by the mitigation measures proposed by the applicant.

Proper planning and sustainable development:

It is considered that subject to compliance with the conditions set out below the proposed development would accord with European, national, and regional planning and would be acceptable in terms of impact on the visual amenities and landscape character of the area, would not seriously injure the amenities of property in the vicinity, would not be prejudicial to public health, would not pose a risk to water quality and would be acceptable in terms of traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

14.0 Conditions

1. The proposed development shall be carried out and completed in accordance with the plans and particulars lodged with the application, and the further plans and particulars received by the Board on the 14th day of October, 2021, and the 11th day of May, 2022. except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development and the proposed development shall be carried out and completed in accordance with agreed particulars.

   Reason: In the interests of clarity.

2. Turbine No's T1 and T2 and associated infrastructure including road infrastructure and Temporary Compound No 2 shall be omitted from the development. A revised layout plan incorporating these changes shall be submitted for the written approval of the planning authority prior to the

commencement of any development on the site. A copy of the revised layout plan shall be placed on the file and maintained as part of the public record.

Reason: To ensure that the identified hen harrier roost site is protected and preserved.

3. The mitigation measures and monitoring commitments identified in the Environmental Impacts Assessment Report and other plans and particulars submitted with the application shall be implemented in full.

Reason: In the interests of clarity and the protection of the environment during the construction and operational phases of the proposed development.

4 The mitigation measures contained in the Natura Impact Statement submitted with the application and the further information received by the Board on 11th, day of May 2022 shall be implemented in full.

Reason: In the interest of clarity and the proper planning and sustainable development of the area and to ensure the protection of European sites.

5 The period during which the proposed development hereby permitted may be constructed shall be 10 years from the date of this Order.

Reason: In the interests of clarity.

6 This permission shall be for a period of 30 years from the date of the first commissioning of the wind farm.

Reason: To enable the planning authority to review the operation of the wind farm in the light of the circumstances then prevailing.

7 The Vestas 136 wind turbine model shall be used on the site as detailed on Drawing No 19876-MWP-00-00-DR-C-5420-P01 received by the Board on October 14th, 2021.

Reason: In the Interests of clarity and proper planning and development.

8 The developer shall ensure that all peat related and spoil mitigation measures set out in the Peat and Spoil Management Plan are implemented in full and monitored throughout the lifecycle of the construction works and throughout the operational phase.

Reason: In the interests of protection of the environment.

9 Prior to any development taking place on the site the developer shall submit for the written agreement of the planning authority, the final detail and specification of the proposed grid connection route.

Reason: In the interests of clarity and proper planning and development.

10 The final Construction Environment Management Plan (CEMP), environmental monitoring plan and culvert/water crossing designs shall be agreed in advance with Inland Fisheries Ireland and shall include provision for post construction monitoring.

Reason: To protect water quality.

11 Decommissioning and construction works shall be limited to between 0800 and 18.00 hours Monday to Saturday and shall not be permitted on Sundays or public holidays.

Reason: To protect the amenities of nearby residential properties

12 The operation of the proposed development, by itself or in combination with other permitted wind energy development, shall not result in noise levels when measured externally at nearby noise sensitive locations, which exceed:

(a) Between the hours of 0700 and 2300:

i the greater of 5 dB(A) $L_{90,10mins}$ above background noise levels, or 45 dB(A) $L_{90,10mins}$, at standardised 10-meter height above ground level wind speed of 6m/s or greater.

ii 40 dB(A) $L_{90,10\ mins}$ at all other standardised 10-meter height above ground level wind speeds.

(b) 43 dB(A) $L_{90,10\ mins}$, at all other times.

Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring programme for the subject development, including any mitigation measures such as the de-rating of particular turbines. All noise measurements shall be carried out in accordance with ISO Recommendation R 1996 “Assessment of Noise with Respect to Community Response” as amended by ISO Recommendation R 1996-1. The results of the initial noise compliance monitoring shall be submitted to and agreed in writing with the planning authority within six months of the commissioning of the wind farm.

Reason: In the interests of residential amenity.

13 The developer shall comply with the with the following shadow flicker requirements:

(a) Cumulative shadow flicker arising from the proposed development shall not exceed 30 minutes in any day or 30 hours in any year at any dwelling.
(b) The proposed turbines shall be fitted with appropriate equipment and software to control shadow flicker at dwellings.
(c) Prior to commencement of development, a wind farm shadow flicker monitoring programme shall be prepared by a consultant with experience of similar monitoring work, in accordance with details to be submitted to the planning authority for written agreement. Details of the monitoring programme shall include the proposed monitoring equipment methodology to be used, and the reporting schedule.

Reason: In the interests of residential amenity.

14 The developer shall comply with the following design requirements:

(a) The wind turbines, including masts and blades, and the wind monitoring masts shall be finished externally in a light-grey colour.
(b) Cables within the proposed development site shall be placed underground.
(c) The wind turbines shall be geared to ensure that the blades rotate in the same direction.
(d) No advertising material shall be placed on or otherwise affixed to any structure on the site without a prior grant of permission.

Reason: In the interests of visual amenity.

15 Details of the materials, colours and textures of all the external finishes of the proposed substation building and enclosing fence shall be submitted to and agreed in writing with the planning authority, prior to commencement of the development.

Reason: In the interests of the visual amenities of the area.

16 The developer shall retain the services of a suitably qualified and experienced bird specialist with respect to Hen Harrier to undertake the following:

(a) a Land Management Plan in the area of the identified roost location and encompassing the lands identified in Appendix 2 of the applicant's submission received by the Board on the 11th day of May 2022.
(b) operational phase monitoring of the roost between October to March for Year 1 to Year 5 following construction.
(c) pre-construction and during construction roost survey monitoring for the remainder of the wind farm development (excluding T1, T2 and associated infrastructure).

Details of the Land Management Plan and the surveys to be undertaken and associated reporting requirements shall be agreed in writing with the NPWS prior to commencement of the development. Copies of the Land Management Plan and the results of the reports shall be submitted (annually on an agreed date) to the planning authority and the NPWS.

Reason: To ensure the appropriate monitoring and protection of the Hen Harrier roost site

17 Details of a pre-construction and post construction monitoring and reporting programme for birds shall be submitted to and agreed in writing with the planning authority prior to commencement of development. The timing and extent of the bird surveys shall be agreed in advance with the National Parks and Wildlife Service (NPWS) and the surveys shall be undertaken by a suitably qualified and experienced bird specialist. The surveys shall be

completed annually for a period of five years following commissioning of the wind farm and copies of the report submitted annually to the planning authority and to the NPWS.

Reason: To ensure the appropriate monitoring of the impact of the proposed development on the avifauna in the area.

18 Prior to commencement of development, details of a post-construction monitoring and reporting programme for bats shall be submitted to and agreed in writing with the planning authority. Monitoring shall be undertaken by a suitably qualified and experienced bat specialist and identify any measures required to mitigate any identified effects. The surveys shall be completed annually for a period of three years following commissioning of the wind farm and copies of the report submitted to the planning authority and the NPWS).

Reason: To ensure the appropriate monitoring of the use of the site by bat species.

19 A bird and bat corpse survey, carried out by a competent ecological surveyor shall be conducted annually under the operational turbines. The survey shall be carried out in according to up-to-date best practice concerning timing and using trained search dogs. The result shall be forwarded annually to the planning authority and the NPWS

Reason: In order to monitor bird and bat mortality associated with the operational wind farm.

20 In the event that the proposed development causes interference with telecommunications signals, effective measures shall be introduced to minimise interference with telecommunications signals in the area. Details of

these measures, which shall be at the developer's expense, shall be submitted to, and agreed in writing, with the planning authority prior to commissioning of the turbines and following consultation with the relevant authorities.

Reason: In the interests of the protection of telecommunications signals and of residential amenity.

21 Details of aeronautical requirements shall be submitted to, and agreed in writing with the planning authority prior to commencement of the development. Prior to the commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as-constructed tip heights and co-ordinates of the turbines and the wind monitoring masts.

Reason: In the interests of air traffic safety.

22 (a) Prior to commencement of the development, a traffic management plan for the construction phase shall be submitted to, and agreed in writing with, the planning authority. The traffic plan shall incorporate the following:

i. Details of the road network/haulage routes and the vehicle types to be used to transport materials to and from the site and a schedule of control measures for exceptionally wide and heavy delivery loads.

ii. A condition survey of the roads and bridges along the haul routes shall be carried out at the developer's expense by a suitably qualified person both before and after the construction of the proposed development. This survey shall include a schedule of required works to enable the haul routes to cater for construction related traffic. The extent and scope of

the survey and the schedule of works shall be agreed within the relevant planning authorities and Transport Infrastructure Ireland prior to commencement of development.

iii. Detailed arrangements whereby the rectification of any construction damage which arises shall be completed to the satisfaction of the planning authority.

iv. Detailed arrangements for the protection of bridges to be crossed.

v. Detailed arrangements for temporary traffic arrangements/control on roads and protocols to keep residents informed of upcoming traffic related matters, temporary lane/road closures and delivery of turbines.

vi. A phasing programme indicating the timescale within which it is intended to use each public route to facilitate construction of the proposed development. In the event that the proposed development is being developed concurrently with any other windfarm in the area, the developer shall consult with and arrange suitable traffic phasing arrangements with the planning authority,

vii. Within three months of the cessation of the use of each public road and haul route to transport material to and from the site, a road survey and scheme of works detailing works to repair any damage to these routes shall be submitted to, and agreed in writing with the planning authority.

(b) All works arising from the aforementioned arrangements shall be completed at the developer's expense within 12 months of the cessation of each road's use as a haul route for the proposed development.

Reason: To protect the public road network, the amenity of local residents and to clarify the extent of the permission in the interest of traffic safety and orderly development.

23 The developer shall comply with the requirements of Irish Water with regard to the protection of drinking water sources and infrastructure in proximity to the development, and in respect of any potential diversions and connections to the public network.

24 **Reason:** In the interests of public health.

25 The developer shall facilitate the preservation, recording and protection of archaeological materials and features that may exist on or within the site. In this regard, the developer shall:

(a) notify the planning authority in writing at least four weeks prior to the commencement of any site operations (including hydrological or geotechnical investigation) relating to the proposed development,

(b) employ a suitably qualified archaeologist who shall monitor all site investigations and other excavation works,

The assessment shall address the following issues:

(i) the nature and location of archaeological material on the site, and
(ii) the impact of the proposed development on such archaeological material.

A report, containing the results of the assessment, shall be submitted to the planning authority and, arising from this assessment, the developer shall

agree in writing with the planning authority details regarding any future archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanala.

Reason: In order to conserve the archaeological heritage of the area and to secure the preservation (in-sit or by record) and protection of any archaeological remains that may exist on the site.

26 On full or partial decommissioning of the windfarm, or if the windfarm ceases operation for a period of more than one year, the turbines and all decommissioned structures shall be removed, and foundations covered with soil to facilitate re-vegetation. These reinstatement works shall be completed to the written satisfaction of the planning authority within three months of decommissioning or cessation of operation.

Reason: To ensure satisfactory reinstatement of the site upon cessation of the project.

27 Prior to commencement of the development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or other such security as may be acceptable to the relevant planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site, coupled with an agreement empowering the relevant planning authority to apply such security or part thereof to the satisfactory reinstatement of the public roads. The form and amount of the security shall be as agreed between the relevant planning authority and the developer or, in default of agreement shall be referred to An Bord Pleanala.

Reason: The ensure the satisfactory reinstatement of the delivery routes.

28 Prior to commencement of the development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or other such security as may be acceptable to the relevant planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site, coupled with an agreement empowering the relevant planning authority to apply such security or part thereof to the satisfactory reinstatement of the public roads. The form and amount of the security shall be as agreed between the relevant planning authority and the developer or, in default of agreement shall be referred to An Bord Pleanala.

Reason: The ensure the satisfactory reinstatement of the delivery routes.

29 Prior to commencement of the development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or other such security as may be acceptable to the planning authority, to secure the satisfactory reinstatement of the site upon cessation of the project, coupled with an agreement empowering the planning authority to apply such security or part thereof to such reinstatement of the site. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement shall be referred to An Bord Pleanala.

Reason: To ensure the satisfactory reinstatement of the site.

30 The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development

Contribution Scheme made under section 48 of the Planning and Development Act 2000, as amended. The contribution shall be paid prior to the commencement of development or in such phased payments as the planning authority may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. Details of the application of the terms of the Scheme shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to An Bord Pleanala to determine the proper application of the terms of the Scheme.

Reason: It is a requirement of the Planning and Development Act, 2000, as amended, that a condition requiring a contribution in accordance with the Development Contribution Scheme made under Section 48 of the Act be applied to the permission.

Breda Gannon
Senior Planning Inspector

19th July 2022