

Inspector's Report ABP-312606-22

Development	Wind farm development of 20 turbines with 110kV electrical substation and all related site works and ancillary development
Location	Townlands of Annagannihy, Aughinida, Ballynagree East, Ballynagree West, Bawnmore, Caherbaroul, Carrigagulla, Carrigduff, Clonavrick, Derryroe, Drishane More, Dromagh, Drominahilla, Dromskehy and other townlands, County Cork
Planning Authority	Cork County Council
Applicant	Ballinagree Wind DAC
Type of Application	Application under the provisions of Section
, j po or i pproducti	37E of the Planning and Development Act 2000, as amended
Prescribed Bodies	37E of the Planning and Development Act 2000, as amended Department of Transport Geological Survey of Ireland Inland Fisheries Ireland Irish Aviation Authority Irish Water Office of Public Works

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	John O'Sullivan (Macroom)
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Date of Site Inspection(s)	21 st , 22 nd and 23 rd August 2024
Inspector	Philip Maguire

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1.0 Introduction

- 1.1. An application has been made to An Bord Pleanála ('the Board') by Ballinagree Wind DAC under the provisions of Section 37E of the Planning and Development Act 2000, as amended ('the Act'), for the development of a wind farm and associated works.
- 1.2. This application is made subsequent to pre-application consultation under Section 37B of the Act (ABP-306948-20), where the Board determined that the proposed development falls within the scope of Section 37A(2)(a) and (b), and accordingly would constitute strategic infrastructure development ('SID') as per the Seventh Schedule.

2.0 Site Location and Description

2.1. Overview

- 2.1.1. The application site, which has a stated area of 615.64ha, is irregular shaped and located within various townlands¹ on the southern slopes of the Boggeragh Mountains.
- 2.1.2. The site is located c. 34km northwest of Cork City, c. 24km southwest of Mallow, c. 10km north of Macroom and c. 10km southeast of Millstreet. The surrounding area is rural in character and mainly consists of dispersed rural housing and farmsteads along the road network. The nearest defined settlement is Ballinagree, c. 1.5km to the south.
- 2.1.3. Chapter 3 of the Environmental Impact Assessment Report (EIAR) outlines the results of a house survey carried out in 2020, which recorded 136 no. houses within 2km of the wind farm site; 60 no. residential receptors were located within 10 rotor diameters (i.e., 1.55km) of the proposed wind turbines, with 10 no. located within 1km of the proposed turbines. The closest residential receptor is located 809m from turbine T13.
- 2.1.4. The site is accessed by local roads and is bisected by the L2750², which connects to the L1123 to the northwest. The N22 national primary route is located 10km the south of the site at Macroom and the N72 is located c. 13km to the north at Banteer. The R579 regional road is located c. 5km to the east and the R582 is c. 5km to the west.

¹ Annagannihy, Aughinida, Ballynagree East, Ballynagree West, Bawnmore, Caherbaroul, Carrigagulla, Carrigduff, Clonavrick, Derryroe, Drishane More, Dromagh, Drominahilla, Dromskehy, Finnanfield, Inchamay South, Kilberrihert, Knocknagappul, Rahalisk and Tullig

² There appears to be some confusion regarding the L-number of this road. It is also referred to in the EIAR as the L2578 and the L2758 but is commonly known as the 'Butter Road'.

- 2.1.5. The main land uses and habitats on the wind farm site are conifer plantation, improved agricultural grassland, heath, scrub and areas of upland peat bog. Two meteorological masts are located on the site, with a height of 80m and 100m, respectively. It is intended to remove both masts prior to construction of the proposed development.
- 2.1.6. Site topography ranges from c.130mAOD to 550mAOD, and from c. 260mAOD (T9 and T10) to 470mAOD (T15) within the vicinity of the proposed turbines. Side slopes range from 0 to c. 20% gradient. The proposed grid connection point is at 160mAOD. Musheramore, at 664mAOD, is the highest peak in the surrounding Boggeragh range.
- 2.1.7. There are a number of areas along the haul route of the wind turbines that are included within the red line boundary. These include two sections along the public road (L1123) near Owenbaun Bridge in the townland of Tullig, northwest of the wind farm. A section in Millstreet at the junction of the Drishane Road (R583) and the L1123. Two sections northeast of Millstreet along the R583, one near Drishane Cemetery and the other near the junction with the N72, with a final section at a nearby bend along the N72.
- 2.1.8. There are a significant number of wind farms in the surrounding area, as illustrated in Figure 3-7 of the EIAR and detailed in the planning history below (section 5.2).
- 2.1.9. Those within c. 20km of the site include:
 - Boggeragh Wind Farm (1 and 2)
 - Carraigcannon Wind Farm
 - Carriganima Wind Farm
 - Esk Wind Farm
 - Pluckanes Wind Farm
 - Bawnmore (Burren/Carraignimma) Wind Farm
 - Caherdowney Wind Farm
 - Gneeves Wind Farm
 - Coomacheo Wind Farm (1 and 2)
 - Clydaghroe Wind Farm
 - Garranereagh Wind Farm

2.2. Natural Heritage Designations

- 2.2.1. The wind farm site is not located within or immediately adjacent to any European sites. The Mullaghanish to Musheramore Mountains SPA is c. 360m to the southwest of the site boundary at its closest point. The Blackwater River SAC is c. 3.4km northeast of the site boundary at its closest point. Tributaries of the River Blackwater can be found in the Boggeragh Mountains range, near the northeastern boundary of the site.
- 2.2.2. The Boggeragh Mountains NHA is directly located to the north of the site with c. 16.3ha of the NHA extending into the site boundary in the north-northwest part of the site. Some 760m of existing access track, which is proposed to be used as part of the construction and operation of the proposed wind farm, passes through the NHA.
- 2.2.3. These natural heritage sites and other relevant sites within a Zone of Influence (ZoI) from the proposal are identified and assessed in the relevant sections of this report.

3.0 **Proposed Development**

3.1. Overview

- 3.1.1. As per the EIAR, there are four elements to the proposed development:
 - the wind farm site (also referred to as 'the site')³,
 - the grid connection route,
 - the turbine delivery route (TDR⁴, also referred to as 'haul route'), and
 - the Biodiversity Enhancement and Management Plan (BEMP) lands.

3.2. **Development Description**

- 3.2.1. The proposed development is described in the statutory notices as follows:
 - Construction of 20 no. wind turbines with a blade tip height range from 179m to 185m, a hub height range from 102.5m to 110.5m and a rotor diameter range from 149m to 155m;

³ The wind farm site generally corresponds to the lands shown within the applicant's control (outlined in blue) whereas the application boundary (outlined in red) is somewhat linear and contained therein. ⁴ 47 no. nodes / points of interest (POIs) are identified along the TDR e.g. 'TDR-POI-29'.

- Construction of turbine foundations and crane pad hardstanding areas including associated drainage infrastructure;
- Construction of new permanent site tracks and associated drainage infrastructure;
- Upgrading of existing tracks and associated drainage infrastructure;
- Upgrade of 2 no. existing forestry and agricultural access junctions for construction and operational access from (1) the local roads L2750-0/L1123-62 in the townlands of Finnanfield and Ballynagree East and (2) from the local road L7461-0 in the townland of Ballynagree West, Co. Cork;
- Upgrade of 2 no. existing forestry access junctions for temporary construction access from the local road L7461-17 in the townland of Knocknagappul, Co. Cork;
- Use of 1 no. existing forestry and agricultural access junction for operational access only from the local road L-7461-44 in the townland of Knocknagappul, Co. Cork;
- Installation of new permanent watercourse and drain crossings and the reuse and upgrade of existing internal watercourse and drain crossings to include (1) the replacement of an existing stone bridge structure with a new clear span concrete bridge structure along the local road L-7461-0 in the townland of Ballynagree West and (2) a new clear span concrete bridge structure along a proposed new track in the townland of Carrigagulla, Co. Cork;
- 3 no. on site borrow pits and associated ancillary drainage within the townlands of Carrigagulla and Knocknagappul, Co. Cork;
- 2 no. temporary construction site compounds and associated ancillary infrastructure including parking within the townlands of Ballynagree West and Carrigagulla, Co. Cork;
- Use of proposed wind farm access tracks and existing forestry and agricultural tracks as permanent recreational amenity trails for community use including the installation of associated signage and information boards and; the partial reinstatement and repurposing of the proposed temporary construction compound as a permanent trail head car park and picnic area including associated landscaping within the townland of Ballynagree West;

- Construction of 1 no. permanent on-site 110kV electrical substation including control buildings, electrical plant and equipment, welfare facilities, carparking, water and wastewater holding tanks, security fencing, lightening protection and telecommunications masts, security cameras, external lighting and, all associated infrastructure within the townland of Ballynagree East, Co. Cork;
- Installation of medium voltage underground electrical and communication cabling connecting the wind turbines to the proposed on-site substation and associated ancillary works;
- Installation of permanent high voltage 110kV underground electrical and communication cabling between the proposed on-site substation within the townland of Ballynagree East to the boundary of the existing Clashavoon substation within the townland of Aughinida, Co. Cork. The cabling will be laid primarily within the public road in the townlands of Knocknagappul, Ballynagree East, Ballynagree West, Bawnmore, Clonavrick, Derryroe, Rahalisk, Kilberrihert, Caherbaroul and Aughinida, Co. Cork. Associated works including the installation of 15 no. pre-cast joint bays and communication chambers; and horizontal directional drilling under 4 no. watercourse crossings in the townlands of (1) Knocknagappul, (2) Knocknagappul and Rahalisk, (3) Rahalisk and Bawnmore and (4) Bawnmore and Clonavrick;
- Tree felling to accommodate the construction and operation of the proposed development;
- Erection of 2 no. meteorological masts with a height of 100m above existing ground levels for the measuring of metrological conditions within the townlands of Ballynagree East and Carrigagulla, Co. Cork. A lightning rod will extend above the masts by 4m;
- Temporary accommodation works at 6 no. locations adjacent to the public roads to facilitate delivery of turbine components to site within the townlands of Dromagh, Dromskehy, Liscahane, Tullig, Drominahilla, Finnanfield and Ballynagree East, Co. Cork. These works will primarily relate to trimming of trees and hedgerows, temporary lowering of boundary walls, temporary removal of boundary walls, temporary ground reprofiling and installation of temporary stone hard standing;

- Installation of a temporary off-site staging area for turbine components within the curtilage of Drishane Castle which is a Recorded Protected Structure (00319) and National Monument (296), within the townland of Drishane More. The works will include removal of a masonry wall and installation of temporary stone hard standing area and associated access track and entrances to and from the public road R583; and
- All related site works and ancillary development including landscaping and drainage.

General Comments

- 3.2.2. The proposal entails the construction of 20 no. wind turbines with a blade tip height range of 179-185m, a hub height range of 102.5-110.5m and a rotor diameter range of 149m-155m, and laid out in southern (T1-T12) and northern (T13-T20) clusters.
- 3.2.3. Key information is set out below. 'Current' land use is that observed during inspection.

Turbine	Land Use (stated)	Land Use (current)	Peat Depth (m)	Slope (°)
T1	Forestry	Forestry	No peat	4
T2	Agricultural	Agricultural	0.6	4
Т3	Agricultural	Agricultural	0.6	12
T4	Forestry	Forestry	No peat	6
T5	Agricultural	Forestry	0.3	4
Т6	Forestry	Forestry	0.1	10
Τ7	Agricultural	Agricultural	No peat	12
Т8	Agricultural	Agricultural	No peat	4
Т9	Agricultural	Agricultural	No peat	6
T10	Agricultural	Agricultural	No peat	6
T11	Forestry	Forestry	No peat	6
T12	Forestry	Forestry	0.3	8

Southern Cluster

Northern Cluster

Turbine	Land Use (stated)	Land Use (current)	Peat Depth (m)	Slope (°)
T13	Agricultural	Agricultural	0.5	14
T14	Agricultural	Pre-thicket forestry	1.0	8
T15	Forestry	Forestry	0.5	6
T16	Agricultural	Agricultural / Pre- thicket forestry	0.3	16
T17	Agricultural	Agricultural	0.6	12
T18	Forestry	Recently felled	2.0	2
T19	Forestry	Recently felled	0.4	2
T20	Forestry	Recently felled	1.0	4

- 3.2.4. References to 'agricultural' in respect of turbines T2, T3, T13 and T17 refers generally to informal upland grazing whereas T7 to T10 was observed as improved grassland.
- 3.2.5. The cover letter accompanying the planning application states that the exact make and model of the turbine will be dictated by a competitive tender process, but that it will be within the abovementioned ranges. It goes on to state that if the Board is of a mind to permit the development based on fixed dimensions only for the turbines, the applicant requests that the following three fixed dimensions for turbines are consented:
 - Tip height of 185m, hub height of 107.5m, rotor diameter of 155m.
 - Tip height of 185m, hub height of 110.5m, rotor diameter of 149m.
 - Tip height of 180m, hub height of 102.5m, rotor diameter of 155m.
- 3.2.6. The cover letter states that each of these 3 no. fixed dimensions within the proposed range have been fully assessed as part of the EIA and AA process.
- 3.2.7. Planning permission is sought for a 10-year period, with construction estimated to last between 18 and 24 months. The proposed operational life is 35 years from the date of commissioning of the entire wind farm. Permission for the on-site substation is sought in perpetuity, given that it could form part of the national electricity network.

3.2.8. As noted, the application was accompanied by an Environmental Impact Assessment Report (EIAR) in addition to a Natura Impact Statement (NIS), various technical appendices and letters of consent from the various landowners (Addendum 2).

3.3. BEMP Lands

- 3.3.1. The overall project includes a BEMP outlining a series of land management measures for 6 no. parcels of land in the vicinity of the wind farm site (but beyond 250m of any proposed turbine), extending to a combined total of c. 304ha. It is stated that landowners have agreed to a long-term commitment to these measures and letters of consent from the individual landowners are included in the application (Addendum 2).
- 3.3.2. It is stated that the BEMP is not designed to mitigate or address particular potential impacts associated with the construction, operation or decommissioning of the proposed wind farm, but is instead a commitment provided to yield a lasting biodiversity benefit to the area in addition to the creation of wildlife corridors.
- 3.3.3. The Board should note that the BEMP lands are predominantly outside the red line boundary or the blue line boundary for other lands in the applicant's ownership/control, save for the western land parcel within the vicinity of proposed turbines T2 and T3.

3.4. Forestry Replanting

3.4.1. It is stated in section 3.3.6 of the EIAR that 88ha of forestry will be felled for the project and that replacement afforestation will be undertaken under licensing from the Department of Agriculture (DAFM) at a distance greater than 10km from the wind farm site, outside of any potential hydrological pathways of connectivity. It is stated that the project will not commence until felling and afforestation licences from DAFM are in place. The replanting does not form part of the application before the Board.

4.0 **Submissions and Observations**

4.1. Local Authority

- 4.1.1. The report of the local authority, Cork County Council, can be summarised as follows:
 - Internal reports:

- Area Engineer: No overall objection, however, some concerns regarding impact on the local road network.
- Ecology: Highlights concerns. Proposes that further information be sought and 4 no. turbines omitted at a minimum (T2, T3, T13, T17).
- Environment (Water): No objection subject to conditions.
- Environment (Air, Noise and Vibration): No significant issues raised but some points may require further information.
- Archaeology: Highlights concerns. Recommends omission of 2 no. turbines (T8 and T9).
- Need for the development is accepted.
- Proposed development is in accordance with the Development Plan.
- Cumulative benefit in reducing CO₂ emissions is recognised.
- Environment Section recommends that the Board seek their own acoustic expertise to peer review the noise impact assessment. Further information recommended with planning conditions also provided.
- Ecology Section recommends significant further information be sought and a minimum of 4 no. turbines omitted.
- Ecology Section recommends that no development take place on intact peatland habitats and development should be avoided on degraded peatland habitats. This may lead to a revised layout and reduction in turbines.
- Potential impacts to water can be mitigated with appropriate conditions and good management.
- The Board should require zero shadow flicker to protect residential amenity.
- The site and its surrounds can accommodate an additional large-scale wind farm.
 A very detailed assessment has been provided. The under-construction Macroom
 Bypass should be considered in terms of visual impact / additional viewpoint.
- Significant further information on ecological issues, particularly the hen harrier, golden plover, bats and badgers is required to complete AA and EIA.

- Local Authority has no objection to the proposed development, subject to conditions and resolution of identified elements of concern.
- Elected Members raised issues including community opposition, adequacy of public consultation during Covid-19 restrictions, bond for road reinstatement. The Members resolved to recommend that sufficient funds are made available by the developer to the Council to reinstate roads.
- 4.1.2. Appendix A of the report sets out suggested conditions, Appendix B details suggested further information and Appendix C provides copies of the internal technical reports.

4.2. **Prescribed Bodies**

- 4.2.1. Addendum 5 to the planning application form lists the prescribed bodies notified by the applicant. The submissions/observations of those who responded are outlined below.
- 4.2.2. The Department of Transport submission can be summarised as follows:
 - Liaison should occur with the local authority, TII, and NTA if necessary, on any future Greenway and Active Travel infrastructure that may be planned for this area.
- 4.2.3. The Geological Survey of Ireland (GSI) submission can be summarised as follows:
 - The Board is referred to the publicly available GSI datasets that are available.
 - GSI is pleased to see use of their maps and datasets in the EIAR including *inter alia* Landslide Susceptibility maps.
 - If development proceeds, GSI would like to receive copies of site investigation reports and photographic record of any significant excavations.
 - Should any significant bedrock cuttings be created, GSI ask that they be designed to remain visible as rock exposure rather than covered with soil.
- 4.2.4. The Inland Fisheries Ireland (IFI) submission can be summarised as follows:
 - IFI recognises the strategic significance of the proposed development, but it is
 essential to undertake it in a manner that does not result in negative impacts on
 fisheries or water quality.
 - Site is within the greater Munster Blackwater and Sullane River basins, both significant salmonid fisheries. The EIAR recognises the sensitivity of both rivers.

- The proposed wind farm poses significant risk of negative impact on fisheries during elements of the construction phase, including site clearance, construction and upgrading of access roads and crossings and the installation of the grid cable.
- The dominant threat to fisheries and water quality is the potential for escapement of suspended solids or other polluting matter to waters.
- The submitted Aquatic Ecological Assessment clearly identifies the hydraulic network of salmonid bearing good and high-status waters within the work zone and the hydraulic area to which it contributes. These waters must be protected to meet Water Framework Directive (WFD) requirements.
- In terms of fisheries, any escapement of solids has the potential to have both short and long-term effects due to sedimentation of spawning gravels.
- A secondary threat results from the risk of impediment or prevention of fish passage due to construction of new or upgraded watercourse crossings.
- If permission is granted, IFI ask that the conditions set out in their submission be imposed. These include *inter alia* compliance with IFI 'Guidelines on protection of fisheries during construction works in and adjacent to waters'.
- 4.2.5. The Irish Aviation Authority (IAA) submission can be summarised as follows:
 - Conditions recommended to agree an aeronautical obstacle warning light with the IAA, to provide as-constructed co-ordinates and heights for each turbine and to notify the IAA of intention to commence crane operations at least 30 days prior to erection.
- 4.2.6. The Irish Water (IW) submission can be summarised as follows:
 - IW (now Uisce Éireann) expects all proposed mitigations in respect of surface water and/or groundwater will be fully implemented to prevent release of sediment into the watercourses to which the site drains.
 - With regard to the grid connection underground cable, IW does not permit any build over of its assets, and separation distances as per IW standards must be achieved. Any proposal to build over or divert IW services must be agreed in advance.
 - Pre-commencement survey of cable route required to identify any IW infrastructure and agree any works.

- 4.2.7. The Office of Public Works (OPW) submission can be summarised as follows:
 - Five new bridges/culverts are proposed. These will require Section 50 consent under the Arterial Drainage Act 1945, as amended. If additional new crossings are identified, these will also require Section 50 consent.
 - Current required design standard for bridges/culverts under Section 50 consent is based on the flood with an annual exceedance probability (AEP) of 1% (1 in 100year flood) increased by 20% to allow for climate change effects. Bridges/culverts must be able to convey this design flood without significantly altering the hydraulic characteristics of the watercourse.
 - Grant of permission does not confer Section 50 consent on the applicant.
 - Appendix 3.3 of the EIAR highlights that some culverts may need to be replaced as part of the grid connection works, subject to survey. If these culverts are on natural watercourses, they will require Section 50 consent. Minimum clear opening size for Section 50 consent purposes is 900mm above the stream bed.
 - In terms of the grid connection route:
 - If cable and ducting are buried in the road as they cross bridges over watercourses and there is no interference with the opening, then there is no issue.
 - A review of the grid connection route on OSI historical mapping indicates the potential for additional watercourse crossings not identified in the EIAR.
 - If it is proposed to pass the cable in its ducting through the opening of any bridge or culvert, or if it is proposed to carry the cable across watercourses on new support structures, then Section 50 consent will be required.
 - If the cabling and ducting is buried under the natural bed by means of horizontal directional drilling (HDD), then Section 50 would not apply.
 - In reference to the EIAR proposal for watercourse damming with flume pipes/diversion channels to facilitate dry instream works, this may be subject to consent under Section 47 of the Arterial Drainage Act.
 - The Flood Risk Assessment (FRA) has not been reviewed by the OPW, however there are some statements in it that demand comment from the OPW:

- Reliance on the Preliminary Flood Risk Assessment (PFRA) to identify flood zones is entirely inappropriate. PFRA should not be relied on for this purpose.
- The identification of the substation and other elements as being in Flood Zone C on the basis of the PFRA is invalid. A site-specific FRA should be carried out.
- The Board should consider if the calculation of the swale volume (section 10.5.3 of the EIAR) takes appropriate account of the fact that the swales will be in many cases at gradients with check dams and that immediately downstream of the check dams there will be little, or no depth of water stored in them.
- The use of FSU methodology and catchment descriptors for flow estimation at new crossings is unsuitable. For Section 50 consent purposes, the flows should be estimated using a suitable range of methods and modified to an appropriate confidence level based on risk, before being used for hydraulic assessment.
- Flows indicated in Table 10-11 seem low to very low for the catchment sizes indicated and are quite unlikely to be acceptable for Section 50 purposes. The growth curve (1.96) indicated in section 10.5.4 of the EIAR is possibly inappropriate for use with the index flood indicated.
- The Board should consider if the flows estimated for use in the FRA are appropriate for the intended purpose.
- The PFRA information shown in Figure 10.3 (OPW Flood Data) is completely inappropriate for use in this context and the potentially misleading nature of the presentation of information is a cause for concern.
- Issues noted on drawings of watercourse crossings include:
 - WF-HF5: It appears that the bed level of the watercourse may be reduced to go under the proposed structure. This will not be acceptable for Section 50 consent. It is required, unless it is unavoidable, that the horizontal and vertical alignments of the watercourse are not interfered with. If the bed level profile, illustrated, is as existing, it should be expected that there could be significant erosion and deposition at the entry to the culvert which could compromise its cross-section. This should be accounted for in the design of the culvert and in the FRA. This applies to all crossings for which Section 50 consent is required.

- WF-HF8: This structure appears to be located at a bend in the watercourse. The structure and bank should be designed to be safe against scour and erosion. This applies to all crossings for which Section 50 consent is required.
- Turbine Delivery Route: It is noted that at TDR-POI-38 there is an indication on EPA mapping that there is a watercourse crossing the site (*'FINNOW* (BLACKWATER)_040'). Any crossing will require Section 50 consent. It is not indicated if any modifications of any structures on the TDR are required.
- A regular maintenance regime should be adopted for the inspection and maintenance of proposed features identified in the FRA for the duration of the project and not just the construction period.
- Contradictory information in the EIAR in relation to the location of existing structures in at least 6 instances (Table 10-7 and Figure 10.5 refer). Co-ordinates of new crossings indicated in Table 10-11 are not given.
- Section 10.5.4. of the EIAR states that an OPW representative was met on site. OPW has no record of any such site meeting.
- History of landslides associated with such developments. This should be assessed.
- 4.2.8. The Transport Infrastructure Ireland (TII) submission can be summarised as follows:
 - No objection, subject to conditions regarding road reinstatement to TII standards and subject to a Road Safety Audit, and an assessment of structures on the haul route to ensure they can accommodate loadings.

4.3. Observers

- 4.3.1. Five observations were received, as follows:
 - Jerry O'Neill
 - John O'Sullivan, Macroom, Co. Cork
 - John O'Sullivan, Mallow, Co. Cork
 - John O'Sullivan & Others, Mallow, Co. Cork
 - Regina and Paul Maguire & Others

- 4.3.2. Two of these observations appear to have been made by the same person (John O'Sullivan of Brookpark, Rathcoole, Mallow, Co. Cork), both on his own behalf and on behalf of a large group of people referred to as 'Mushera Wind Aware', respectively (see signed petition included with observation). A third observation was received from a John O'Sullivan, with an address at Horsemount, Ballinagree, Macroom, Co. Cork.
- 4.3.3. The issues raised can be summarised under the following themes:

Public Consultation

- Lack of/inadequate consultation, due to Covid-19 and the applicant's approach.
- Landowners were tied into contracts before applicant's studies began in 2017. This is a *fait accompli*, not genuine consultation.
- No consultation on the laying of underground 110kV cables. Health and safety concerns about high voltage cables in proximity to houses. The alternative cable route has to be considered.

Residential Amenity / Public Health

- No shadow flicker study has been undertaken that conforms to best practice.
- Shadow flicker impacts due to proximity to homes.
- Noise pollution and noise impacts. Inadequate setback distances from dwellings and infrasound impacts.
- Health impact, including epilepsy, autism, cardiac, sleep and mental health issues.
- Impacts on private wells. No consultation on watercourse crossings, which could impact on wells. Water is a human right and should not be compromised.
- Damage and pollution of aquifer.

Visual Amenity

- Landscape and visual impact on area of particular scenic beauty.
- Permission refused for a dwelling house in the area due to a corner of the roof protruding onto the skyline, however these turbines will be 185m high.

- The 2006 Wind Energy Guidelines are totally irrelevant. The average turbine height now is 3.5 times the average height in 2006. No further grants of permission should take place until the new Guidelines are put in place.
- Impacts on Mushera and surrounding areas used by walkers, cyclists, bird watchers, wildlife enthusiasts due to loss of its unique beauty and creation of an industrial landscape.
- Negative effect on tourism and the local economy.
- Excessive number of wind farms in the area 5 no. active and 1 no. approved.
- The famous Butter Road from Cork to Kerry runs right through the area Millstreet to Rylane (Route L1123 L2751). This should be protected.

Cultural Heritage

• Area is extremely rich in archaeological sites, with the greatest density of such sites in Europe. These should be protected.

Natural Heritage

- Impact on hen harrier, skylarks and various 'Red List' and 'Amber List' species including the white-tailed eagle. Six hen harrier nesting sites are within 5km.
- Flight paths of migrating birds, such as wild geese may have been missed.
- Biodiversity impacts on bats, squirrel, badger, stoat, hare, foxes, frogs etc.
- Devil's-bit scabious plant is present. Impact on marsh fritillary butterfly. Kerry slug is present on site.
- Sediment run-off to the Blackwater will affect freshwater pearl mussel habitat.
- Peat slippage concerns, as occurred in Donegal and other wind farm sites.
- Environmental surveys should be commissioned by the local authority and reimbursed by the applicant.

Other Issues

- Devaluation of property.
- Depopulation of the area.

- Applicant stated that there was no planning history. However, planning was sought in 2012 for a wind farm in the same area (ABP ref. PL04.239775).
- Turbine blades cannot be recycled and end up in landfill.
- Impact on mobile phone and TV reception.
- Trespass on observers' lands by contractors employed by the applicant.
- Concerns regarding the response time / submission period.

4.4. Further Information

- 4.4.1. Further information (RFI) was sought on 2nd May 2023 in respect of the following:
 - 1. Address the implications, if any, of the Cork County Development Plan 2022-2028 (adopted since lodgement of the application) for the proposed development.
 - Provide additional photomontage from the recently opened section of the Macroom Bypass and an assessment of the visual impact from the viewpoint.
 - 3. Address the matters raised in the OPW submission, including:
 - (a) Submission of a site-specific flood risk assessment.
 - (b) Address contended errors/contradictory information in EIAR.
 - (c) Address contended issues with regard to flow estimation calculations and swale volumes.
 - (d) Confirm whether the design of watercourse crossings WF-HF5 and WF-HF8 complies with OPW requirements.
 - 4. Provide a detailed response to the matters raised in the Cork County Council submission, including a response to the list of items contained in Appendix B of the submission.
 - 5. It is noted that the Biodiversity Enhancement Management Plan lands are generally not within the application site boundary, or within contiguous land ownership boundary. Provide further information on how the Board can be satisfied that the implementation of this plan and the ongoing land management measures therein would be achieved over the lifetime of the proposed wind farm.
 - 6. Respond to other issues raised in the submissions made.

- 4.4.2. A response to the RFI was received on 15th January 2024 (the applicant having requested additional time to respond). It includes clarifications and updates to the initial EIAR and NIS and it can be summarised as follows:
 - 1. No discernible changes between the previous and current Development Plans.
 - 2. Additional views and LVIA submitted from the Macroom Bypass.
 - 3. Response provided to matters raised by OPW.
 - Response provided to matters raised by Cork County Council under the headings of Ecology; Air Quality and Climate; Traffic and Transport; Noise and Vibration; Hydrology, Water Quality and Flood Risk; and Cultural Heritage etc.
 - 5. Information provided to the Board on how the Biodiversity Enhancement Management Plan and ongoing land management measures can and will be achieved over the lifetime of the proposed development.
 - 6. Response provided to other submissions including IFI, TII, GSI, IAA, OPW, IW and the Department of Transport.
- 4.4.3. The RFI response will be addressed in the relevant sections of this report.

4.5. Submissions on Further Information

- 4.5.1. The applicant's RFI response was circulated to the parties for further submissions/observations. A further 3 no. submissions were received.
- 4.5.2. Cork County Council's submission can be summarised under the following headings: Archaeology, Architectural and Cultural Heritage
 - Applicant's clarification on proposals for turbine delivery staging area at Drishane Castle is satisfactory.
 - Applicant has clarified basis for removal of stone culvert in Ballinagree East townland and for not using Horizontal Directional Drilling. Pre-construction survey and preservation by record recommended.
 - Omission of Turbine 8: County Archaeologist accepts the applicant's response, given the separation distance, poorly preserved nature of the monument and lack of existing sightlines to the stone circles to the north.

- Omission of Turbine 9: County Archaeologist accepts that direct negative impacts are avoided but recommends that the turbine be removed as it will negatively affect the setting of the nearest stone circle (CO049-008).
- Archaeological conditions recommended.

Ecology

- Ecology Office position is that the four turbines previously recommended for exclusion should be omitted due to: being contrary to Objectives ET 13-7 and BE 15-2 of the Development Plan; having regard to pre-planning advice to avoid impacts to habitats of high ecological value; and having regard to the extent of loss, degradation and fragmentation of upland habitats and habitats of high biodiversity value in the wider area.
- Board should consider in-combination and cumulative effects including other SID application in the wider area on upland habitat of high biodiversity value such as Gortyrahilly Wind Farm.
- Board should have regard to the recently published *Threat Response Plan* and national survey findings for hen harrier, which were not available to the Ecology Office at the time of their opinion.
- Ecology Office disagree with applicant's ecologist that the development will not impact on golden plover and continues to be concerned about the likely effects on this red-listed species of conservation concern. I-WeBS data shows 54% decline over a 23-year period.
- Board is asked to have regard to Article 4(4) of the Birds Directive and Article 10 of the Habitats Directive in respect of species such as hen harrier and golden plover given the loss, fragmentation and alteration of habitat utilised by these species in the wider environment.
- In addition to conditions recommended in previous report, Board is asked to impose a condition requiring a detailed post-construction Ornithological Monitoring and Mitigation Plan for the site. This should include monitoring and surveys for the lifetime of the project, fatality monitoring, fluid mitigation response and updating of monitoring, and implementation of a curtailment programme in the event that large number of species of conservation concern are traversing/utilising the site.

Traffic and Transport

- Turbine T9: There seems to be some confusion over the location of turbine T9 in relation to the public road. The Public Road Register shows the L-34182 extending to the north past T9. It is accepted that this surface may be poor or non-existent, but it is legally registered as a public road. The applicant must address this issue, it is not acceptable to simply dismiss it as an "error in the shapefile".
- Cable route: Applicant response says that they will reinstate the trench on two lane routes. Experience of previous wind farms on two-lane roads where cable routes are installed is that the second lane is used for plant and machinery while the first lane is excavated, resulting in severe damage that is virtually impossible to match in the trench reinstatement in a satisfactory manner. It is therefore recommended that all roads where the cable route is installed should receive full road width regulating and resurfacing. Surface dressing alone will not suffice.
- Construction traffic: Response is noted, but is recommended that no construction traffic of any kind, including light vehicles or workers travelling to or from site is to be allowed on the following public roads: L7464-0; L-34192-0; L-7463-0; L-34183-0; L-34182-0 (except at northern end), L-34181-0; L-7461-44 (south of the application site boundary), L-5245-26; L-3418 (between Coppeleen Bawn Cross and Annaganihy Cross.
- 4.5.3. The submission from the OPW can be summarised as follows:
 - Online meeting held to discuss applicant's response. Discussion focused on the flow estimation in support of a proposed large bridge structure. It was emphasised that a range of methods should be used for flow estimation. It was clarified that the flow estimations used for FRA and Section 50 purposes did not need to be to the same confidence level.
 - Matters relevant to applications for consent under Section 50 of the Arterial Drainage Act 1945, as amended, will be considered by the Commissioners when applications are made by the applicant.
 - Matters relating to the FRA and the Site-Specific Flood Risk Assessment (SSFRA) are for the Board to assess.

- The Board should be satisfied that the other matters OPW have commented on are addressed to the satisfaction of the Board.
- Any crossings of watercourses need the prior consent of OPW. This is independent of the planning process and a grant of planning permission does not obviate this requirement. OPW would be grateful if the Board would draw the applicant's attention to this matter.
- 4.5.4. The GSI's response stated that they had no additional comments or observations.

5.0 **Planning History**

5.1. Application Site

- 5.1.1. PA ref. 21/4476 in July 2021, the planning authority granted permission for continued use of an existing temporary met mast, 80m in height and erected as exempted development (Class 20A, Pt. 1, Sch. 2). Condition 2 limits the duration to 5 years.
- 5.1.2. PA ref. 20/5342 in January 2021, the planning authority granted permission for a temporary met mast, 100m in height. Condition 17 limits the duration to 5 years.

5.2. Wind Farms in Surrounding Area (<10km)

Boggeragh Wind Farm 1 – due N-NE

- 5.2.1. PA ref. 01/1248 in April 2003, the Board upheld the decision of the planning authority and granted permission for 19 no. wind turbines etc. (ABP ref. PL04.130546). Extension of duration (PA ref. 08/5944). Permission amended (PA ref. 08/7158).
- 5.2.2. PA ref. 18/4256 in May 2018, the planning authority granted permission for extension to Boggeragh substation to include 4 no. battery storage units and associated works.

Boggeragh Wind Farm 2⁵ – due E-NE

5.2.3. PA ref. 10/8067 – in April 2012, the Board upheld the decision of the planning authority and granted permission for 26 no. wind turbines etc. (ABP ref. PL04.239775). I note that part of the appeal site boundary crosses the proposed site at the northern end.

⁵ Also referred to as Knockduff Wind Farm.

Carraigcannon Wind Farm – c. 3.5km N

- 5.2.4. PA ref. 03/4181 in March 2004, the planning authority granted permission for 10 no. wind turbines etc. The duration of this permission was extended (PA ref. 09/4564).
 Bawnmore Wind Farm c. 5km S
- 5.2.5. PA ref. 01/6529 in April 2003, the planning authority granted permission for 7 no. wind turbines etc. The duration of this permission was extended (PA ref. 08/6149) and the permission was amended (PA ref. 08/8770) to include 1 no. additional turbine.
- 5.2.6. PA ref. 18/5240 in November 2018, the planning authority granted permission for extension to Bawnmore substation to include 4 no. battery storage units etc.

Carriganima Wind Farm⁶ – c. 5km W

5.2.7. PA ref. 07/4102 – in June 2007, the planning authority granted permission for a wind farm development consisting of 6 no. wind turbines etc.

Esk Wind Farm – c. 10km E-NE

- 5.2.8. PA ref. 11/5276 in March 2013, the Board upheld the decision of the planning authority and granted permission for 8 no. turbines etc. (ABP ref. PL04.240281).
- 5.2.9. PA ref. 14/5602 in February 2016, the Board upheld the decision of the planning authority and granted permission for 4 no. turbines etc. (ABP ref. PL04.245196).

5.3. Wind Farms in Wider Area (>10km)

5.3.1. Wind farms in the wider area include:

Curragh Wind Farm – c. 11km W

5.3.2. PA ref. 07/9632 – in August 2008, the planning authority granted permission for a wind farm development consisting of 8 no. turbines etc. (PA ref. 07/10105 also refers).

Caherdowney Wind Farm – c. 12km W

5.3.3. PA ref. 03/3079 – in October 2003, the planning authority granted permission for a wind farm consisting of 4 no. turbines etc. Extension of duration (PA ref. 08/9493).

⁶ Also referred to as Bawnmore 2 Wind Farm.

Gneeves Wind Farm – c. 12km W

- 5.3.4. PA ref. 99/616 in September 1999, the planning authority granted permission for a wind farm development consisting of 13 no. turbines etc. Permission amended / modified (PA ref. 03/6585). Extension of durations (PA refs. 08/5636 and 13/4566).
- 5.3.5. PA ref. 04/188 in August 2004, the planning authority granted permission for an extension to the wind farm consisting of an additional 4 no. wind turbines etc.
- 5.3.6. PA ref. 13/5717 in September 2014, the planning authority granted permission for an extension to the wind farm consisting of an additional 3 no. wind turbines etc.

Coomacheo Wind Farm – c. 12km W

- 5.3.7. PA ref. 03/1997 in July 2003, the planning authority granted permission for a wind farm development consisting of 17 no. wind turbines etc. Permission amended (PA refs. 06/10251 and 07/4177). Subsequent referral cases (refs. RL3346 and RL3351). Clydaghroe Wind Farm (Co. Kerry) c. 16km W
- 5.3.8. PA ref. 04/3152 in November 2004, planning authority granted permission for 2 no. wind turbine etc. An additional 1 no. turbine granted in April 2007 (PA ref. 07/306).
 Pluckanes Wind Farm c. 17km E
- 5.3.9. PA ref. 09/4399 in May 2009, the planning authority granted permission for 1 no. wind turbine. The operational life of the turbine extended under PA ref. 21/4715.

5.4. Other Wind Farms (>20km)

Garranereagh Wind Farm – c. 20-25km S-SE

- 5.4.1. PA ref. 14/6760 current appeal case (ABP-308210-20⁷) for a wind farm consisting of 6 no. turbines etc. Board decision pending at time of completion of this report.
- 5.4.2. PA ref. 15/730 in October 2016, the Board upheld the decision of the planning authority and granted permission for 5 no. turbines etc. (ABP ref. PL04.246353).
- 5.4.3. PA ref. 21/5372 in October 2023, the Board upheld the decision of the planning authority and granted permission for 3 no. turbines etc. (ABP-313261-22).

⁷ Remitted case - a previous Board decision at the appeal site was quashed by the High Court (PL04.248153).

Cleanrath Wind Farm – c. 22km SW

5.4.4. ABP-307939-20 – in January 2024, the Board granted substitute consent for 9 no. turbines etc. The wind farm was built under ABP ref. PL04.246742 (PA ref. 15/6966) which was subsequently quashed by the Supreme Court in December 2019. A previous appeal decision (ref. PL 04.240801) to grant permission was also quashed.

Inchamore Wind Farm – c. 23km W-SW

- 5.4.5. PA ref. 23/5145 current appeal case (ABP-319216-24) for a wind farm consisting of 5 no. turbines etc. Board decision pending at time of completion of this report.
 Gortyrahilly Wind Farm c. 23km W-SW
- 5.4.6. ABP-314602-22 current SID application case for a wind farm consisting of 14 no. turbines etc. Board decision pending at time of completion of this report.

Shehymore Wind Farm – c. 28km SW

- 5.4.7. PA ref. 13/551 in December 2016, the Board upheld the decision of the planning authority and granted permission for 11 no. wind turbines etc. (ABP ref. PL04.243486).
 Coom Wind Farm c. 30km E-NE
- 5.4.8. ABP-308885-20 in November 2023, the Board granted permission for a SID wind farm consisting of 22 no. turbines etc.

Knockacummer Wind Farm – c. 31km N-NW

5.4.9. PA ref. 04/8354 – in December 2005, the Board upheld the decision of the planning authority and granted permission for 29 no. wind turbines etc. (ABP ref. PL04.210685).

Grousemount Wind Farm – c. 31km W-SW

ABP ref. PL08.PA0044 – in July 2016, the Board granted permission for a SID consisting of 38 no. wind turbines etc.

Curraglass Wind Farm – c. 34km SW

5.4.10. PA ref. 20/350 – in May 2024, the Board upheld the decision of the planning authority and refused permission for 7 no. wind turbines etc. (ABP-315656-23⁸). Having regard to the receiving environment, the Board considered that the combined effect of the height, scale and disposition of the proposed turbines would lead to excessively

⁸ Remitted case - a previous Board decision at the appeal site was quashed by the High Court (ABP-308244-20).

dominant features and a visually obtrusive form of development within the local landscape, would detract from the existing natural character of the area and would contribute to the erosion of the visual environmental amenity of the area. In failing to satisfactorily comply with policy objective ET13-7 of the Cork County Development Plan 2022-2028, the Board concluded that the proposed development would seriously injure the visual amenity of the area, would detract from the character of the area, would be contrary to the relevant provisions of the Development Plan and would therefore be contrary to the proper planning and sustainable development of the area.

5.5. Other Relevant History

5.5.1. Other selected relevant history:

Carragraigue Solar Farm

5.5.2. PA ref. 16/5455 – in August 2017, the planning authority granted permission for a solar farm development of up to 33,000sq.m of PV panels etc. Permission was subsequently granted in July 2019 to extend the solar farm under PA ref. 18/6562.

Knockglass Solar Farm

5.5.3. PA ref. 15/5424 – in June 2016, the Board upheld the decision of the planning authority and granted permission for a solar farm development etc. (ABP ref. PL04.245862). The duration of this permission was extended until June 2026 under PA ref. 21/5941.

Clashavoon Substation

5.5.4. PA ref. 04/6419 – in January 2005, the planning authority granted permission for a 110kV single-circuit overhead transmission line (OHL) to Clashavoon substation. I note that part of the site boundary crosses the application site to the northern end.

6.0 Policy Context

6.1. Local Planning Policy

Cork County Development Plan 2022-2028

6.1.1. The SID application was lodged in January 2022. The Cork County Development Plan 2022-2028 came into effect in June 2022 and was varied in September 2022. This application shall be determined under the provisions of this current Development Plan.

- 6.1.2. The Development Plan does not include a zoning objective for the application site.
- 6.1.3. The main Development Plan policies and objectives relevant to the proposed development are set out under chapters 13 (Energy and Telecommunications).
- 6.1.4. The following sections are particularly relevant:
 - 13.4 Energy Cork
 - 13.5 Renewable Energy
 - 13.6 Wind Energy (Fig. 13.3 Wind Energy Strategy Map)
 - 13.7 Development Proposals
- 6.1.5. The following sections are also relevant:
 - 14.7 Landscape
 - 14.8 Landscape Character Assessment of County Cork
 - 14.9 Landscape Views and Prospects
 - 15.3 Protecting Sites, Habitats and Species Legislative Context
 - 15.7 Biodiversity Considerations for New Development or Other Activities
 - 15.11 Noise and Light Emissions
 - 15.12 Waste
 - 16.2 Archaeological Heritage
 - 16.3 Architectural Heritage
 - 16.4 Cultural Heritage
- 6.1.6. The following Objectives are generally noted:
 - ET 13-1 Energy

(a) Ensure that County Cork fulfils its potential in contributing to the sustainable delivery of a diverse and secure energy supply and to harness the potential of the county to assist in meeting renewable energy targets and managing overall energy demand.

(b) During the life of this plan, the Planning Authority will prepare a renewable energy strategy for the county.

ET 13-2 Renewable Energy

(a) Support Ireland's renewable energy commitments as outlined in Government Energy and Climate Change policies by facilitating the development of renewable energy sources such as wind, solar, geothermal, hydro and bio-energy and energy storage at suitable locations within the county where such development has satisfactorily demonstrated that it will not have adverse impacts on the surrounding environment (including water quality), landscape, biodiversity or amenities.

(b) Support and facilitate renewable energy proposals that bring about a direct socio-economic benefit to the local community. The Council will engage with local communities and stakeholders in energy and encourage developers to consult with local communities to identify how they can invest in/gain from significant renewable energy development.

ET 13-4 Wind Energy

In order to facilitate increased levels of renewable energy production consistent with national targets on renewable energy and climate change mitigation as set out in the National Energy and Climate Plan 2021-2030, the Climate Action Plan 2021, and any updates to these targets, and in accordance with Ministerial Guidelines on Wind Energy Development, the Council will support further development of on-shore wind energy projects including the upgrading, repowering or expansion of existing infrastructure, at appropriate locations within the county in line with the Wind Energy Strategy and objectives detailed in this chapter and other objectives of this plan in relation to climate change, biodiversity, landscape, heritage, water management and environment etc.

ET 13-5 Wind Energy Projects

(a) Support a plan led approach to wind energy development in County Cork through the identification of areas for wind energy development. The aim in identifying these areas is to ensure that there are minimal environmental constraints, which could be foreseen to arise in advance of the planning process. (b) On-shore wind energy projects should focus on areas considered 'Acceptable in Principle' and 'Areas Open to Consideration' and generally avoid "Normally Discouraged" areas as well as sites and locations of ecological sensitivity.

ET 13-9 National Wind Energy Guidelines

Development of on-shore wind should be designed and developed in line with the 'Planning Guidelines for Wind Farm Development 2006' and 'Draft Wind Energy Development Guidelines 2019" and any relevant update of these guidelines.

ET 13-10 Development in line with Best Practice

Ensure that wind energy developments in County Cork are undertaken in observance with best industry practices, and with full engagement of communities potentially impacted by the development. In accordance with the Code of Practice 'Good Practice for Wind Energy Development Guidelines 2016', wind energy development operators are required to put in place an effective complaints procedure in relation to all aspects of wind energy development projects, where members of the public can bring any concerns they have about operational difficulties, including noise and nuisance to the attention of the wind energy development operator.

ET 13-11 Public Consultation and Community Support

(a) Require wind energy developers to carry out active public consultation with the local community in advance of and in addition to the statutory public consultation required as part of the planning application process.

(b) Applications for large scale wind energy development require a 'Community Report' with the planning application documents detailing the full extent of community and wider public engagement.

6.1.7. With regard to the Wind Energy Strategy for the county, this remains unchanged from the previous Development Plan. The application site is primarily located within an area designated as 'Open to Consideration' where the following Objective applies:

ET 13-7 Open to Consideration

Commercial wind energy development is open to consideration in these areas where proposals can avoid adverse impacts on:

- Residential amenity particularly in respect of noise, shadow flicker and visual impact;
- Urban areas and Metropolitan/Town Green Belts;
- Natura 2000 Sites (SPA's and SAC's), Natural Heritage Areas (NHA's), proposed Natural Heritage Areas and other sites and locations of significant ecological value.
- Architectural and archaeological heritage;
- Visual quality of the landscape and the degree to which impacts are highly visible over wider areas.

In planning such development, consideration should also be given to the cumulative impacts of such proposals.

- 6.1.8. A parcel of the application site, in the vicinity of proposed turbine T2, is located within an area designated as 'Normally Discouraged' where the following Objective applies:
 - ET 13-8 Normally Discouraged

Commercial wind energy developments will be discouraged in these areas which are considered to be sensitive to adverse impacts associated with this form of development (either individually or in combination with other developments). Only in exceptional circumstances where it is clear that adverse impacts do not arise will proposals be considered.

- 6.1.9. The application site is not located within any of the Very High Value landscape areas defined in the Development Plan. With regard to Landscape Character, the site is split across several character types, including Ridged and Peaked Upland and Fissured Marginal and Forested Rolling Upland (both Medium landscape sensitivity and value), and Valleyed Marginal Middleground (High landscape sensitivity and value).
- 6.1.10. With regard to Landscape Views, the Development Plan identifies specific Scenic Routes consisting of important and valued views and prospects within the County.

Scenic Route S20, which includes a number of branching local roads, is located in the vicinity of the application site. It is described as:

"Local Roads at Mushera in the Boggeragh Mountains and roads from Mushera to Ballynagree, Lackdotia and Rylane Cross. Views of and from the Boggeragh Mountains, views of the Knocknagoun Mountains & remote rural landscape".

- 6.1.11. In terms Scenic Routes, the following Objectives are noted:
 - GI 14-13 Scenic Routes

Protect the character of those views and prospects obtainable from scenic routes and in particular stretches of scenic routes that have very special views and prospects identified in this Plan. The scenic routes identified in this Plan are shown on the scenic amenity maps in the CDP Map Browser and are listed in Volume 2 Heritage and Amenity Chapter 5 Scenic Routes of this Plan.

GI 14-14 Development on Scenic Routes

(a) Require those seeking to carry out development in the environs of a scenic route and/or an area with important views and prospects, to demonstrate that there will be no adverse obstruction or degradation of the views towards and from vulnerable landscape features. In such areas, the appropriateness of the design, site layout, and landscaping of the proposed development must be demonstrated along with mitigation measures to prevent significant alterations to the appearance or character of the area.

(b) Encourage appropriate landscaping and screen planting of developments along scenic routes.

- 6.1.12. With regard to biodiversity, the follows Objectives are noted:
 - BE 15-2 (Protect Sites, Habitats and Species)
 - BE 15-6 (Biodiversity and New Development)
 - BE 15-8 (Trees and Woodlands)
 - BE 15-13 (Noise and Light Emissions)
 - BE 15-17 (Waste Prevention and Management)

- 6.1.13. With regard to tourism, the following Objectives are noted:
 - TO 10-5 (Protection of Natural, Built and Cultural Features)
 - TO 10-6 (Cultural Tourism)
- 6.1.14. With regard to built and cultural heritage, the following Objectives are noted:
 - HE 16-2 (Protection of Archaeological Sites and Monuments)
 - HE 16-5 (Zones of Archaeological Potential)
 - HE 16-6 (Industrial and Post Medieval Archaeology)
 - HE 16-9 (Archaeology and Infrastructure Schemes)
 - HE 16-10 (Management of Monuments within Development Sites)
 - HE 16-11 (Archaeological Landscapes)
 - HE 16-13 (Undiscovered Archaeological Sites)

Blarney-Macroom Municipal District Local Area Plan (LAP) 2017

- 6.1.15. The Blarney-Macroom LAP was adopted on 24th July 2017 and came into effect on 21st August 2017. This application lies within the Blarney Macroom Municipal District.
- 6.1.16. The LAP does not include a zoning objective for the application site.
- 6.1.17. The following sections are generally of note:
 - 3.4 Macroom Environs
 - 5.1.32 Rylane/Seiscne
 - 5.2.16 Ballinagree

Kanturk-Mallow Municipal District Local Area Plan 2017

- 6.1.18. The Kanturk-Mallow LAP was adopted on 24th July 2017 and came into effect on 21st August 2017. This application lies just south of the Kanturk-Mallow Municipal District.
- 6.1.19. The following sections are generally of note:
 - 3.3 Millstreet
 - 5.1.31 Kilcorney
 - 5.2.36 Lyre
6.2. Regional Planning Policy

Regional Spatial and Economic Strategy for the Southern Region (RSES)

- 6.2.1. The Southern Region RSES (SRA, 2019) is a strategic plan and investment framework designed to shape future growth and better manage regional planning and economic development throughout the region, including the Metropolitan Area of Cork.
- 6.2.2. The site is outside the Cork Metropolitan Area Strategic Plan (MASP) boundary.
- 6.2.3. Chapter 5 states that the Regional Assembly is committed to implementing regional policy consistent with the Climate Action Plan 2019. It goes on to state that the RSES recognises and supports the many opportunities for wind as a major source of renewable energy. Opportunities for both commercial and community wind energy projects should be harnessed, having regard to the Wind Energy Planning Guidelines.
- 6.2.4. The following Regional Policy Objectives (RPOs) are noted:
 - RPO 87 Low Carbon Energy Future

The RSES is committed to the implementation of the Government's policy under Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019. It is an objective to promote change across business, public and residential sectors to achieve reduced GHG emissions in accordance with current and future national targets, improve energy efficiency and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture.

RPO 95 Sustainable Renewable Energy Generation

It is an objective to support implementation of the National Renewable Energy Action Plan (NREAP), and the Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the Region as a leader and innovator in sustainable renewable energy generation.

RPO 98 Regional Renewable Energy StrategyIt is an objective to support the development of a Regional RenewableEnergy Strategy with relevant stakeholders.

RPO 99 Renewable Wind Energy

It is an objective to support the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines.

6.2.5. Chapter 8 relates to Water & Energy Utilities. Section 8.2 (Strategic Energy Grid) and the following RPO's are also relevant to the proposed development:

RPO 219 New Energy Infrastructure

It is an objective to support the sustainable reinforcement and provision of new energy infrastructure by infrastructure providers (subject to appropriate environmental assessment and the planning process) to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely manner and that capacity is available at local and regional scale to meet future needs.

- RPO 221 Renewable Energy Generation and Transmission Network
 - a. Local Authority City and County Development Plans shall support the sustainable development of renewable energy generation and demand centres such as data centres which can be serviced with a renewable energy source (subject to appropriate environmental assessment and the planning process) to spatially suitable locations to ensure efficient use of the existing transmission network;
 - b. The RSES supports strengthened and sustainable local/community renewable energy networks, micro renewable generation, climate smart countryside projects and connections from such initiatives to the grid. The potential for sustainable local/community energy projects and micro generation to both mitigate climate change and to reduce fuel poverty is also supported;
 - c. The RSES supports the Southern Region as a Carbon Neutral Energy Region.

6.3. National Planning Policy and Guidelines

Project Ireland 2040: National Planning Framework (NPF)

- 6.3.1. The NPF contains a number of relevant strategic outcomes and a number of national policy objectives which are relevant to the proposed development before the Board.
- 6.3.2. The NPF includes a set of 10 National Strategic Outcomes. The National Climate Policy Position establishes the national objective of achieving transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050. This objective will shape investment choices over the coming decades in line with the national mitigation plan and the national adaptation framework. New energy systems and transmission grids will be necessary for a more distributed, renewables focused energy generation system, harnessing both the considerable onshore and offshore potential for energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand.
- 6.3.3. The transition to a low carbon and climate resilient society recognises that more diversified and renewables focussed energy systems will be necessary. It aims to deliver 40% of electricity needs from renewable sources by 2020 with further increases through to 2030 and beyond in accordance with stated EU/National Policy.
- 6.3.4. The NPF also notes that in addition to legally binding targets agreed at EU level, it is a national objective to transition a competitive low carbon economy by 2050. This will include an aggregate reduction in CO₂ emissions of at least 80% (v. 1990 levels) by 2050 across the electricity generation, built environment and transport sectors and, in parallel, an approach to carbon neutrality in agriculture and land use sector, including forestry which does not compromise capacity for sustainable food production.
- 6.3.5. The following National Policy Objectives (NPOs) are noted:
 - NPO 21 Enhance the competitiveness of rural areas by supporting innovation in rural economic development and enterprise through the diversification of the rural economy into new sectors and services, including ICT-based industries and those addressing climate change and sustainability.
 - NPO 54 Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy

mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.

NPO 55 Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.

Wind Energy Development Guidelines for Planning Authorities 2006

- 6.3.6. These guidelines (WEDG) still constitute the official guidance on wind farms under the provisions of Section 28 of the Planning and Development Act 2000, as amended.
- 6.3.7. The guidelines set out advice in relation to the design, siting, spatial extent, and height of turbines in various landscape character types. Guidance is also provided on matters such as noise, shadow flicker, natural heritage, archaeology, architectural heritage, ground conditions, aircraft safety, wind take and potential cumulative effects.
- 6.3.8. In terms of noise, a lower fixed rate limit of 45 dB(A) or a maximum increase at 5 dB(A) above background noise at nearby noise sensitive locations is considered to be appropriate to provide protection to wind energy neighbours. However, in very quiet areas the use of a margin of 5dB(A) above the background noise level at nearby noise sensitive properties may unduly restrict wind energy developments which have wider national benefits. In low noise environments where the background noise is less than 30dB(A) it is recommended that the daytime level of LA90 10 mins of the Wind Energy Development Noise be limited to an absolute level with the range of 35 to 40 dB(A).
- 6.3.9. The guidelines state that separate noise limits should apply for daytime and for nighttime and that during the night the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. They note that a fixed limit of 43dB(A) will protect sleep inside properties during the night⁹.
- 6.3.10. The guidelines state that noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500m.
- 6.3.11. In relation to shadow flicker, it is recommended that at neighbouring offices/dwellings within 500m, shadow flicker should not exceed 30 hours/year or 30 minutes/day. I also note that a degree of flexibility in turbine location is provided for in section 7.3.

⁹ There are no prescribed hours but they are generally taken as 23:00 to 07:00 hrs e.g. ETSU-R-97, The Assessment and Rating of Noise from Wind Farms (1996).

Draft Revised Wind Energy Development Guidelines 2019

- 6.3.12. The Board will note that these guidelines (dWEDG) have remained in draft form and have not yet been adopted as Ministerial guidance under Section 28 of the Act.
- 6.3.13. Section 3.1 of the draft emphasises the need for development plans to incorporate a plan-led approach to wind farms identifying areas which are considered to be suitable or not suitable for wind farm development. There is an emphasis on any development plan highlighting how it is proposed to contribute to overall national renewable targets.
- 6.3.14. Section 4.3.2 emphasises the need for community involvement and taking community views into account when establishing, siting and designing wind farm developments. Section 4.9 sets out general separation distances to ensure appropriate siting etc.
- 6.3.15. Section 5.7 relates to noise and states that the preferred approach is to propose a relative rated noise limit of 5 dB(A) above existing background noise in the ranges of 35 to 43 dB(A) with 43 dB(A) being the maximum noise limit permitted day or night. The limits will apply to outdoor locations at any residential or noise sensitive properties.
- 6.3.16. In terms of appropriate setback from boundaries, the draft suggests that four times the tip height or at least 500m between the turbine and the nearest point of curtilage of any residential property in the vicinity is most appropriate for visual amenity purposes.

Flood Risk Guidelines

- 6.3.17. The Planning System and Flood Risk Management, Guidelines for Planning Authorities (DEHLG, November 2009)¹⁰, seek to avoid inappropriate development in areas at risk of flooding, and new development increasing flood risk elsewhere, whilst also avoiding unnecessary restriction of national, regional or local economic growth.
- 6.3.18. Figure 3.2 of the guidelines illustrates the sequential approach to managing flood risk.
- 6.3.19. Section 3.5 of the guidelines notes that most types of development would be considered inappropriate in Flood Zone A i.e., where a high probability of flooding exists. Whilst development in this zone should be avoided, it may be considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and subject to a Justification Test.

¹⁰ These guidelines were amended/clarified under Circular PL 2/2014.

- 6.3.20. Table 3.1 of the guidelines notes that 'essential infrastructure' includes 'utilities distribution' and this is classified as 'highly vulnerable development', whereas 'local transport infrastructure' is classified as 'less vulnerable development'. Table 3.2 outlines that such 'highly vulnerable development' requires a Justification Test in Flood Zone A and Flood Zone B, and is appropriate development in Flood Zone C, whereas 'less vulnerable development' requires a Justification Test of C, whereas 'less vulnerable development' requires a Justification Test of C, whereas 'less vulnerable development' requires a Justification Test of C, whereas 'less vulnerable development' requires a Justification Test of C, whereas 'less vulnerable development' requires a Justification Test in Flood Zone A, only.
- 6.3.21. Box 5.1 of the guidelines sets out the Justification Test for development management.

6.4. Other National Policy and Guidance Documents

Climate Action Plan 2024

- 6.4.1. The Climate Action and Low Carbon Development Act 2015, as amended, ('the Climate Act'), commits the State to a legally binding 51% reduction in overall GHG emissions by 2030 and to achieving net zero emissions by 2050. Section 15 places an obligation on the Board to make all decisions in a manner consistent with this Act.
- 6.4.2. The Climate Action Plan 2024 (CAP 24) follows the commitment in the Climate Act, and sets out the range of emissions reductions required for each sector to achieve the committed to targets. CAP 24 supports the acceleration of the delivery of renewable energy onto the national grid with a target of achieving 80% of electricity demand being met from renewable energy by 2030. In this regard, CAP24 sets a target of providing 9GW from onshore wind by 2030, identical to that in the preceding plan, CAP 23.

National Biodivserity Action Plan 2023 – 2030

6.4.3. Ireland's 4th National Biodiversity Action Plan (NBAP) was launched on 25th January 2024. It sets the national biodiversity agenda until 2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature.

National Energy and Climate Plan 2021 – 2030

6.4.4. The National Energy and Climate Plan (NECP) was prepared in accordance with Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action. The EU Governance Regulation is effectively the piece of EU legislation under which Ireland is held accountable in meeting its stated de-carbonisation targets. 6.4.5. The NECP set out specific annual targets for delivery of onshore and offshore wind in order to meet the requirements of Article 4 of the Regulation. The minimum onshore target by 2025 is an installed capacity of 5900MW, an increase of c. 1700MW on 2020.

Hen Harrier Threat Response Plan 2024 – 2028

- 6.4.6. The Hen Harrier Threat Response Plan (DHLGH, 2024) was launched on 9th September 2024. Its notes that the hen harrier typically forages over ground that is rich in prey, such as grasslands, but highlights that juvenile survival over-winter is poor, and recruitment into the breeding population is lower than needed for a stable population. Changes in agricultural practices, forestry and wind energy development are identified as primary pressures and threats on the species, while climate change and recreational pressure in important areas for the species may also play a role.
- 6.4.7. It notes that national population surveys were carried out in 1998-2000, 2005, 2010, 2015 and 2022. The 2015 survey estimated a breeding population of between 108 and 157 pairs in the State, an estimated decrease of 16% since the 2010 national survey and 34% since the 1998-2000 survey. As of 2022, the total SPA population had declined by 10.1% since 2015, 19.5% since 2010 and by 34% since 2005.
- 6.4.8. Section 7.4 of the Response Plan sets out the action for wind energy development.

The 2022 National Survey of breeding Hen Harrier in Ireland (IWM 147)

- 6.4.9. The latest report on the status of breeding hen harrier in Ireland (Ruddock *et. al,* 2024) was published in February 2024 by the NPWS in their *Irish Wildlife Manuals* series.
- 6.4.10. It aimed to examine the abundance and distribution of hen harrier in Ireland, to estimate the change in the population size and distribution across their breeding range nationally and within the six SPAs designated for breeding hen harrier in the State.
- 6.4.11. It estimates the hen harrier population at 85 confirmed and 21 possible breeding pairs (85-106) in 2022. This is a 33% decline in the total population since the previous national survey in 2015 and a 27% contraction in their breeding range for that period.
- 6.4.12. Estimated rates of breeding success and productivity remain low (0.7 fledged young/breeding pair) and are below the 1.0 fledged young/breeding pair typically required for a stable population. The populations of five of the SPAs have declined by between 20% and 80% since 2007, when they were identified for designation. Overall, the SPA populations have declined by more than half (54 %) in the same period.

6.5. EU Legislation/Policy

Renewable Energy Directive 2018/2001/EU ('RED II')

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

Renewable Energy Directive EU/2023/2413 ('RED III')

6.5.2. Given the need to speed up the EU's clean energy transition, the Renewable Energy Directive 2018/2001/EU was revised in 2023. The amending Directive, RED III, entered into force on 20th November 2023. Member States, including Ireland, must transpose RED III into national law by 21st May 2025. However, certain provisions – most notably those aimed at accelerating permit-granting procedures – were to be transposed into national law by 1st July 2024. RED III sets an overall renewable energy target of at least 42.5% binding at EU-level by 2030 – but aiming for 45%.

Climate and Energy Policy Framework 2030

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

Framework for Renewable Energy Deployment Regulation (EU) 2022/2577

6.5.4. In recognition of the need to accelerate the deployment of renewable energy in light of the threat to the security of the supply of energy within the EU arising from the war in Ukraine, this Regulation introduces a number of measures aimed at streamlining and prioritising the permit granting processes relating to renewable energy developments and associated infrastructure. In particular, Article 3(1) establishes a presumption that renewable energy developments and associated infrastructure is "in the overriding public interest and serving public health and safety" when balancing the pressing need for such development with the environmental and species conservation objectives deriving from the Habitats Directive, the Birds Directive and the Water Framework Directive. It has since been extended under Regulation (EU) 2024/223.

Effort Sharing Regulation (EU) 2018/842

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

7.0 Oral Hearing

7.1. None of the submissions or observations requested an oral hearing and I consider that there is sufficient information on file to allow for a comprehensive assessment of the application and the issues arising from the submissions. No oral hearing was held.

8.0 Assessment

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

9.0 Planning Assessment

9.1. Introduction

- 9.1.1. Having examined the application details and all other documentation on the file, including the submissions and observations, and inspected the site, and having regard to relevant local, regional and national policies and guidance, I consider that the main issues in this application are those generally raised in the course of the application.
- 9.1.2. The issues can be addressed under the following headings:
 - Principle of Development
 - Public Consultation
 - Public Health
 - Residential Amenity
 - Visual Amenity
 - Natural Heritage / BEMP
 - Traffic and Transportation
 - Other Issues

9.2. Principle of Development

- 9.2.1. Renewable energy projects have strong planning policy support as outlined in section6 above, from the perspectives of climate action, security of supply and sustainability.
- 9.2.2. The turbines associated with the proposed wind farm development are mainly located within an area designated as 'Open to Consideration' for wind energy development.
- 9.2.3. In addition to the consideration of cumulative impacts of commercial wind energy development, Plan Objective ET 13-7 states that such proposals are open to consideration in these areas where they can avoid adverse impacts on *inter alia*:
 - Residential amenity i.e., noise, shadow flicker and visual impact;
 - SPA's and SAC's, NHA's, pNHA's and other sites of significant ecological value;

- Architectural and archaeological heritage; and
- Visual quality of the landscape and the degree to which impacts are highly visible over wider areas.
- 9.2.4. I have however some concerns in relation to the locus of turbine T2 in the townland of Knocknagappul. It would appear to me to cross into a 'Normally Discouraged' area as illustrated in the Wind Energy Strategy Map (Figure 13.3) of the Development Plan¹¹.
- 9.2.5. Whilst the applicant's further information response acknowledges that part of the southwestern end of the site boundary is in an area identified as 'Normally Discouraged', it is suggested that it does not contain any of the proposed turbines.
- 9.2.6. I am not entirely convinced that this is the case and the associated hardstand area would certainly appear to fall within the 'Normally Discouraged' zone in any event. In this regard, Plan Objective ET 13-8 provides that only in exceptional circumstances, where it is clear that adverse impacts do not arise, will such proposals be considered.
- 9.2.7. I also note that the further information response has not abated the concerns of the local authority's ecologist, who remains of the view that T2 should be omitted, in addition to turbines T3, T13 and T17, in order to avoid impacts to habitats of high ecological value, and having regard to the extent of loss, degradation and fragmentation of upland habitats and habitats of high biodiversity value in the area.

Conclusion on Principle of Development

- 9.2.8. Having regard to the policy considerations outlined in section 6 above and attaching significant weight to the CAP24 target of providing 9GW from onshore wind by 2030, I consider that the proposed development is generally acceptable in principle.
- 9.2.9. This is subject to further consideration of the matters outlined in Objective ET 13-7 and other planning and environmental considerations which are addressed below.

9.3. Public Consultation

9.3.1. A number of the observations contend that there was inadequate consultation with members of the public and the local community in advance of the making of the

¹¹ See interactive version of this Map available in Volume 6 of the Development Plan.

planning application. The issues relate both to a lack of engagement and the applicant's use of newsletters and documentation rather than face-to-face meetings.

- 9.3.2. In this regard, I am mindful of Development Plan Objective ET 13-11 which requires active public consultation with the local community and the submission of a Community Report detailing the extent of community and wider public engagement.
- 9.3.3. The applicant's further information response did not address any of these concerns, however Chapter 5 of the EIAR sets out the consultation process with the public and relevant stakeholders including local environmental groups during the scoping phase.
- 9.3.4. I note that the applicant appointed Community Liaison Officers (CLO's) in April 2019. According to the EIAR, their role included door-to-door consultation and distribution of project materials including newsletters, follow-up meetings where requested, liaison between residents and the project team, communication of updates, feedback etc.
- 9.3.5. I also note that a Community Report is included in Appendix 5.4 of the EIAR which outlines this engagement and liaison with the local community. This is summarised in Table 5.4 of the EIAR. I specifically note the impact of the Covid-19 restrictions on the movement of the CLO's and this has been adequately documented in my opinion.
- 9.3.6. Table 5 of the Community Report summarises the key issues raised during community engagement with common themes raised by the various parties to this application. Section 5 of the report indicates that community feedback influenced project design.
- 9.3.7. In addition to Development Plan Objective ET 13-11, I note section 4.4 of the WEDG, suggests that planning authorities should encourage developers to engage in public consultation with the local community. Whilst noting that it is not a mandatory requirement, it strongly recommends that the developer of a wind energy project actively engages in consultation and dialogue with the community at an early stage.
- 9.3.8. Appendix 2 of the WEDG provides advice for developers on best practice in the preapplication public consultation process. It notes that providing the public with a good flow of information about a proposal can avoid conflict in the future. It also refers to it being helpful to circulate information pertaining to a wind farm proposal to residents within c. 1km and to community groups, churches and clubs within a c. 10km radius.
- 9.3.9. It is clear from Chapter 5 of the EIAR that consultation occurred with a wide range of relevant prescribed bodies and other stakeholders as part of the scoping and pre-

application process. With regard to local residents and the wider local community, it is clear from the information submitted that this was initially focussed on residents within 3km, and that a variety of channels and methods of communication were used.

- 9.3.10. I also note that 'Newsletter 5', a project leaflet with the final 20 turbine layout was hand delivered by the CLO's to the 'vast majority' of homes within 5km, in August 2021.
- 9.3.11. While the applicant's approach to public consultation was broadly consistent with the WEDG, it was, perhaps, overly focussed on the immediate 3-5km environs. Given the scale of the proposed turbines, broader consultation and circulation of information within the 10km radius referenced in the WEDG would have been of benefit notwithstanding the publication of an advertorial in the local press in September 2021.
- 9.3.12. It is also clear from the information submitted by all parties that the restrictions associated with the Covid-19 pandemic presented difficulties with regard to the public consultation process, and in that regard the use of remote engagement through website¹², including an online virtual tour and information platform etc. is noted. I also specifically note the Community Webinar event, with Q & A, held in October 2021.

Conclusion on Public Consultation

- 9.3.13. I consider that the applicant's approach has had regard to the relevant guidance for wind farms and that they have complied with their statutory requirements with regard to publication of site and newspaper notices. I note in this regard the significant number of signatures included on the petitions submitted with the observations, which is indicative of the wide level of public awareness of the proposed development.
- 9.3.14. The observers set out detailed concerns regarding the potential impacts of the proposed development on residential amenity, including public health, visual amenity, cultural heritage, natural heritage and other concerns, including property values. These issues will be addressed throughout this report; however, on balance, I consider that adequate public and stakeholder engagement was conducted by the applicant.

9.4. Public Health

9.4.1. The observers have raised issues in relation to public health. Specific concerns relate to the impact on those with epilepsy, autism and with cardiac issues. Impacts on sleep

¹² Project website: www.ballinagreewindfarm.ie

and mental health were also raised. Whilst these evidently are health and wellbeing issues, they overlap with residential amenity concerns and are addressed below in the context of noise and shadow flicker. They are also considered in the EIA (section 10.6).

9.4.2. Concerns regarding the impact on private wells and the aquifer have also been raised. Whilst they too are considered in the EIA (section 10.8), they do merit comment here in addition to concerns regarding the high voltage grid cables close to dwellinghouses.

Grid Connection Route

- 9.4.3. Whilst inferring a lack of public consultation, as previously noted, one of the observers has raised specific concerns in relation to high voltage cables in the public road in proximity to their house. They suggest that an alternative route should be considered.
- 9.4.4. I have considered the alternative grid routes presented, as noted in section 10.4 of the EIAR below, and I am satisfied that the EIAR is robust in this regard. In relation to this specific issue, the observer has not presented any evidence to support their concerns and I consider that underground electrical cables are a standard construction practice for renewable energy projects. Moreover, the EIAR indicates that the ICNIRP guidelines on electromagnetic interference are not exceeded at all relevant distances and therefore potential impact to human health will be negligible and imperceptible.

Water Pollution

- 9.4.5. I note that one of the observers has indicated that their water source is a spring well close to turbine T6. They have raised genuine concerns in this regard but I have no information before me to identify the exact location of this spring source. Another observer raises similar concerns about damage and pollution to the underlying aquifer.
- 9.4.6. The Cork County Council submission notes that the Ballinagree public water supply is from a groundwater abstraction which is located more than 1km away from the nearest turbine location. They indicate that this well is sufficiently separated and not at risk.
- 9.4.7. In terms of groundwater vulnerability, Cork County Council note that all dwellings are more than 750m from the nearest turbine location and therefore make the assumption that their water supplies are well separated from the main construction activities.
- 9.4.8. Therefore, they have not raised any specific concerns regarding the impact of the proposal on any private wells or the underlying aquifer. They do, however, note that

the proposal has the potential to impact on groundwater during the construction phrase, through plant fuel/hydrocarbons, unless appropriate mitigations are applied.

- 9.4.9. The proposed mitigation measures are considered in greater detail below but suffice to say they are generally standard construction practices for a proposal of this nature.
- 9.4.10. I also note that a detailed water quality monitoring programme is proposed during the construction phase, in addition to visual inspections, to ensure the effective implementation of the proposed mitigation measures. I specifically note that field measurements and samples will be taken at suitable locations and can be conditioned.

Conclusion on Public Health

9.4.11. On balance, and for the reasons outlined above and considered in greater detail in the EIA (section 10.8), I do not consider that the proposal will adversely impact on public health through a deterioration in groundwater quality or in relation to the grid route.

9.5. Residential Amenity

- 9.5.1. The observers raised a number of concerns in relation to residential amenity. Chief amongst them are the impacts and issues relating to shadow flicker and turbine noise.
- 9.5.2. These are amongst the specific criteria under Development Plan Objective ET 13-7 where adverse impacts ought be avoided insofar as they relate to residential amenity. *Shadow Flicker*
- 9.5.3. A number of parties have raised the issue of shadow flicker. Specific concerns relate to the proximity of the wind farm to homes and the efficacy of the shadow flicker study.
- 9.5.4. The submission from Cork County Council states that every effort should be made to avoid the impacts of shadow flicker occurring in the first instance, and where this is not possible, that condition should require the applicant to implement mitigation measures to ensure zero shadow clicker is attained to protect residential amenity.
- 9.5.5. Shadow flicker is addressed in Chapter 12 of the EIAR. Shadow flicker effects were considered within a study area of 1,550m from each of the proposed turbines (i.e., ten times the maximum rotor diameter). This is in accordance with the WEDG 2006, which states that the potential for shadow flicker at distances greater than that is very low.

- 9.5.6. I note that the modelling software used to calculate shadow flicker includes a number of conservative assumptions, including 100% cloudless skies and a situation where all proposed turbines face onto all receptors, which cannot and will not happen in reality.
- 9.5.7. Section 12.2 of the EIAR sets out the methodology for the assessment and includes a review of relevant national and international guidance on the issue of shadow flicker. The EIAR notes that the WEDG 2006 state that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30-hours/year or 30-minutes/day, while the dWEDG 2019 sets out a zero-shadow flicker policy, with the use of technology.
- 9.5.8. The EIAR assessment utilises the WEDG 2006 limits but extends it out to cover the entire study area of 10 rotor diameters. It also states that it adopts the dWEDG 2019 with regard to mitigation (i.e., reducing shadow flicker to zero hours). I consider this approach to be a reasonable, conservative and pragmatic approach to the utilisation of the current applicable Section 28 guidelines for planning authorities, whilst also recognising the substantial increase in typical turbine size since 2006 and the resultant potential shadow flicker effects on sensitive receptors in the immediate and wider area.
- 9.5.9. The applicant's survey identified no receptors within the 500m area, and a total of 60 no. receptors within the wider 1,550m area, the closest of which was within 809m.
- 9.5.10. The assessment considers three scenarios for different combinations of hub heights, rotor diameters and tip height:
 - Scenario 1: Largest Rotor, Highest Tip Height Rotor diameter of 155 m and hub height of 107.5m;
 - Scenario 2: Highest Hub Smallest rotor diameter (149 m) on the maximum hub height (110.5 m); and
 - Scenario 3: Largest Rotor Largest rotor diameter (155 m) on the smallest hub height (102.5 m)
- 9.5.11. There is the potential for shadow flicker to occur at up to 35 of the 60 no. receptors for Scenarios 1 and 2 and 38 no. receptors for Scenario 3. There is no potential for the remaining receptors because of the angle of sun relative to the turbines and receptors.
- 9.5.12. Of the potentially affected receptors, up to 17 no. may exceed the criteria of 30minutes/day and up to 23 no. may exceed the criteria for 30-hours/year, both in Scenario 3. This is under the worst case 'maximum theoretical hours per day/hours

per year' (i.e., with sun shining 100% of daylight hours). Applying a more likely scenario, with average annual sunshine hours for the area taken into account, this is reduced to 2 no. receptors located on the L2750 between the two groups of turbines.

- 9.5.13. With regard to potential cumulative impacts, the EIAR considers the operational Boggeragh and Knockduff Wind Farms¹³, both of which are within 2km. While there is considerable overlap between the potential shadow flicker areas for the wind farms, there are no receptors within the study areas. The EIAR concludes that the potential cumulative impact of shadow flicker is negligible. This is considered reasonable.
- 9.5.14. In order to mitigate the potential shadow flicker impact, it is proposed to implement control modules in the turbines with software to prevent turbine operation during the specific periods when shadow flicker exceeds the thresholds. The use of such control mechanisms to address potential shadow flicker is a relatively standard feature in modern wind turbines and, given that shadow flicker effects, by their nature, lend themselves to accurate prediction, there is no reason to believe that the shut-down protocols would be ineffective in mitigating the potential impacts in the limited cases where they arise. I further note that the turning off of particular turbines as certain times is explicitly referenced in the WEDG 2006 as an example of a measure to prevent or ameliorate the potential effect of shadow flicker on nearby sensitive receptors.
- 9.5.15. Subject to implementation of these mitigation measures, I do not consider that the proposed development would result in significant shadow flicker impacts at residential receptors within a distance of 10 rotor diameters of the proposed wind turbines.
- 9.5.16. If the Board is minded to grant permission, I recommend a suitable condition be imposed in relation to shadow flicker thresholds, control measures and the submission of a report to the planning authority to establish compliance with these requirements. *Noise*

- 9.5.17. A number of parties have raised the issue of turbine noise, including infrasound.
- 9.5.18. Noise impacts, including the site-specific concern raised by one of the observers and the more general concerns raised by the others, are fully considered in section 10.8 of the EIA. Based on the modelling presented in the EIAR, I note that the proposal

¹³ As noted in section 5.2, Knockduff Wind Farm is also, and more commonly, referred to as Boggeragh 2.

complies with the daytime and night-time noise limit criteria at noise sensitive receptors as per the WEDG 2006, regardless of hub height with the specified range.

- 9.5.19. Whilst the modelling predicts isolated exceedances in the cumulative impact scenario for daytime and night-time, this can partly be attributed to adjacent wind farms and I note that it is proposed to maintain the subject wind farm at 10dB below the predicted operational noise from these surrounding wind farms and this is deemed acceptable.
- 9.5.20. In terms of infrasound, the EIAR refers to various international studies which suggest that there is no evidence that wind turbines generate perceptible infrasound and the observers have not offered any scientific evidence to suggest otherwise.
- 9.5.21. Having regard to the large separation distances to the nearest residential receptors, and the information submitted including the mitigation proposed, I do not consider that the proposal would adversely impact on residential amenity by reason of noise.
- 9.5.22. If the Board is minded to grant permission, I recommend a suitable condition be imposed in relation to noise thresholds, control measures and the submission of a report to the planning authority to establish compliance with these requirements.

Conclusion on Residential Amenity

9.5.23. On balance, and for the reasons outlined above and considered in greater detail in the EIA, section 10.8 in the case of noise, I do not consider that the proposal will adversely impact on residential amenity by reason of shadow flicker or operational turbine noise.

9.6. Visual Amenity

- 9.6.1. The observers have raised concerns regarding landscape and visual impacts and submit that the proposal will negatively impact on walkers, cyclists and tourism generally through the creation of an industrial landscape, impacting the local economy.
- 9.6.2. Conversely, the local authority has suggested that the site and its surrounds can accommodate an additional large-scale wind farm and their residual concerns over views from the Macroom bypass were satisfactorily addressed by further information.
- 9.6.3. The local authority, through the Council's archaeologist, did raise specific concerns in relation to the impact of turbines T8 and T9 on the setting of the nearest stone circles. Whilst this is a cultural heritage impact, it is evidently one from a visual perspective and given the similar concerns raised by observers it is noted here for completeness.

9.6.4. Whilst these issues are considered and assessed in section 10.9 of the EIA, they do merit comment here where the visual impact interacts with other tangible amenities. In this regard, I am specifically referring to the visual impact of the proposal on recreation and tourism, and the cultural heritage of the area as experienced by people.

Recreation and Tourism

- 9.6.5. The application site is located between two designated key tourism assets in the Development Plan, namely Blackwater River Valley and Lee River Valley, but the Boggeragh Mountains do not form part of either asset. The recreational appeal of the area is therefore derived from its natural and cultural heritage features including the dramatic peak at Musheramore, the winding Duhallow Way and a peppering of archaeological sites, including St. John's holy well and Carrigagulla Stone Circle.
- 9.6.6. In this regard, I note that Development Plan Objective TO 10-5 seeks to protect and conserve those natural and cultural heritage features that form the resources on which the County's tourist industry is based, including areas of important landscape and archaeological sites. Moreover, I note that Objective TO 10-6 seeks to encourage the development of cultural trails around the County. To my mind, the proposal represents a net improvement on existing recreational and tourism facilities by providing c. 15km of new or upgraded tracks as walking trails with a designated trailhead car park and I consider this, in general terms, to be an acceptable trade-off in respect of the impact.
- 9.6.7. In this regard, I would generally accept that wind farms are becoming a familiar sight in upland and exposed landscapes and their interaction with recreational tourism, and particularly hiking and trekking, is becoming commonplace. I do not accept, however, that the context and setting for turbines T13 and T17, which comprises an exposed upland landscape on the southern slope of Seefin ridge, adjacent to scenic route S20, is acceptable. The turbines will be a significant intrusion on this localised section of scenic route / Duhallow Way, and whilst the predominant views are generally in a southerly direction, the effect of these elevated turbines will be overbearing on this resource. Further, I do not accept that it is appropriate to 'moderate' the landscape sensitivity of this particular part of the site given the important relationship between landscape and tourism as acknowledged in the Cork County Development Plan.
- 9.6.8. Such moderation is noted in the EIAR and whilst it considers that no significant visual impacts will arise, it acknowledges the potential for some localised areas in the

immediate proximity of the southern cluster to experience impacts that are close to significant. I consider this extends to turbines T13 and T17, and therefore I recommend that the Board omit these turbines in the event of a grant of permission.

9.6.9. For the reasons set out in section 10.9, I do not however consider that any of the southern cluster of turbines will adversely impact on the visual amenities of the area.

Cultural Heritage

- 9.6.10. I accept the observer's submission that the subject area has an abundance and density of archaeological heritage sites and whilst they have not provided any evidence to corroborate their statement that it is the largest concentration in Europe, I do acknowledge its importance on a local, regional and national level. Indeed, the EIAR specifically notes that there are two main concentrations of stone circles monuments in Ireland (a Mid-Ulster group and a Cork/Kerry group) and of the c. 250 known examples in Ireland c. 100 are located in Cork, mostly to the west of the county.
- 9.6.11. As noted above, there is an obvious interrelationship between tourism and cultural heritage, and the observers infer that the visual impact of the proposal will impact on both. For similar reasons as set out above, I do not agree and in fact I consider the converse to be true. The proposed walking trails will open up these cultural heritage assets to further footfall and overall increase the tourism offering in the local area.
- 9.6.12. With specific regard to turbine T8, I note that the Council's initial concerns were addressed to their satisfaction at further information stage. Their concerns regarding turbine T9 remain extant in their submission on the further information response, however, for the reasons outlined in section 10.9, and having specific regard to the lack of intervisibility between the relevant stone circles and other archaeological sites in the area, I do not deem it necessary to omit either of the turbines. On balance, the visual impact of these turbines is significantly outweighed by the recreational offering.

Conclusion on Visual Impact

9.6.13. I have addressed the issue of potential landscape and visual impacts in section 10.9 below, where I have generally concluded that the proposal would not have any unacceptable direct, indirect or cumulative landscape and visual impacts that would warrant a refusal of planning permission. This conclusion does not, however, negate the other requirements of the Development Plan which seeks to protect those features

that form the resources on which the county's tourist industry is based. On balance, the proposal is acceptable in visual terms subject to the omission of T13 and T17.

9.7. Natural Heritage / BEMP

- 9.7.1. The observers raised a number of concerns in relation to natural heritage. Chief amongst them were impacts on a number of bird species, including hen harrier, as well as other mammals and habitat, such as that of the freshwater pearl mussel.
- 9.7.2. As noted, Cork County Council's ecologist also raised specific concerns in relation to the siting of turbines T2, T3, T13 and T17 on high value upland habitat and in respect of the impact the proposal would have on populations of hen harrier and golden plover.
- 9.7.3. It should be noted that further information was also requested regarding the BEMP.
- 9.7.4. The concerns regarding the impact on bird species, including relevant SCI species, are considered and assessed in section 10.7 of the EIA and section 11, appropriate assessment, insofar as they relate to designated European sites. Similarly, concerns regarding other flora and fauna are also addressed in these sections of the report.
- 9.7.5. However, given the nature of the Council's submission, where 25% of the proposed wind turbines are recommended for omission, habitat impact merits comment here.

Habitat Loss

- 9.7.6. In reiterating their recommendation that the aforementioned turbines be omitted, the local authority's submission on further information states that these turbines at their proposed locations would be contrary to Development Plan Objectives ET 13-7 and BE 15-2; their pre-application advice to avoid impacts to habitats of high ecological value, such as peatland habitat; and having regard to the extent of loss, degradation and fragmentation of upland habitats and habitats of high biodiversity value in the area.
- 9.7.7. As noted in section 9.2.3 above, Objective ET 13-7 seeks to avoid adverse impacts on *inter alia* SPA's, SAC's, NHA's, pNHA's and other sites and locations of 'significant ecological value'. None of the proposed turbines or infrastructure directly impacts on any of the designated European sites, NHA's or pNHA's, although siting proximity to the Mullaghanish to Musheramore SPA (c. 360m) and site overlap with the Boggeragh Mountains NHA (c. 16.3ha) is noted, with the former also being a cause of concern.

- 9.7.8. For the reasons set out in section 10.7 of the EIA, I am not satisfied that the applicant's further information response has adequately demonstrated that these particular turbines are sited on areas of heavily altered or degraded heath habitat and I agree with the local authority in this regard. These concerns are compounded by the fact that crane pad hardstanding alone associated with these turbines is c. 1.12ha (40m by 70m, by 4 turbines) and having regard to the zone of influence for Ground Water Dependent Terrestrial Ecosystems (GWDTE), which includes wet heath, there is an obvious lacuna in terms of how far the impact will spread i.e., 1m excavation = 250m buffer. I therefore also agree there will be further loss, degradation and fragmentation.
- 9.7.9. The loss of this upland habitat will also result in an indirect impact on hen harrier for which the adjacent Mullaghanish to Musheramore SPA is designated, but for the reasons set out in the appropriate assessment below, no likely significant effects arise. *BEMP*
- 9.7.10. The further information request noted that the BEMP lands are generally not within the application site boundary, nor within contiguous land ownership boundaries. In this regard, the applicant was requested to provide further information on how the Board can be satisfied that the implementation of this plan and the ongoing land management measures therein would be achieved over the lifetime of the proposed wind farm.
- 9.7.11. I have reviewed the further information response including the BEMP supporting letters (Appendix 8). As outlined in the EIAR, it reiterates that the BEMP lands serve as a planning gain for the surrounding area, rather than as works that are required to mitigate against impacts as a result of the proposed wind farm development.
- 9.7.12. In terms of implementation, the applicant has submitted legal letters in respect of Co-operation Agreements with the relevant private landowners for a term of 30-35 years. I note that three of the four landowners have the option to terminate the agreement after 15 years. In the event of a termination, the further information response notes that alternative lands will be sourced for the remainder of the term i.e., 15-20 years.
- 9.7.13. The response therefore suggests that implementation of the BEMP can be addressed by Section 47 planning agreement and in this regard, it requests that any such condition is for a period of 15 years initially, with a review prior to the 15-year period expiring before signing a second Section 47 agreement for a further 15 years. It suggests that this allows for sufficient comfort that the works will be carried out in

accordance with the BEMP, and that the applicant can enter into this agreement whilst accounting for a circumstance where a landowner decides to terminate after 15 years.

9.7.14. I note that the biodiversity enhancement lands comprise areas where habitat will be managed to benefit hen harriers and other species of conservation importance. A target of the biodiversity management plan will be the deintensification of areas of managed grassland to improve the overall biodiversity value of such lands over an extended period and will include measures such as reduction of grazing, rush cutting and hedgerow management. These measures are commended and represent clear planning gain beyond the traditional development contribution mechanisms. On balance, I am satisfied that the applicant has demonstrated that these measures can be legally enforced and therefore I recommend the inclusion of an appropriately worded Section 47 agreement if the Board are minded to grant planning permission.

Conclusion on Natural Heritage / BEMP

9.7.15. On balance, I do not consider that the wind farm proposal will adversely impact on the natural heritage of the area, subject to the omission of turbines T2, T3, T13 and T17.

9.8. Traffic and Transportation

9.8.1. Whilst the main issues pertaining to traffic and transportation are addressed in section 10.9 below, and generally involve construction-related impacts, I note that the local authority appear to remain of the view that turbine T9 should be omitted from the scheme following the further information response and therefore merits comment here.

Turbine T9

- 9.8.2. The initial comments from the local authority's roads department suggested that turbine T9 and part of the site access track was on or adjacent to a public road, referred to as L-34128-0, and the applicant was requested to confirm that this is not the case.
- 9.8.3. The applicant's further information response suggests that the mapping provided by Cork County Council is inaccurate and the area in the vicinity of turbine T9 contains only private agricultural and forestry tracks that are not accessible to the public. They go on to state that the road identified by the Council as the L-34182-0, which appears to connect to the L3418, c. 1.5 km south of turbine T9, terminates at an existing gated farmyard entrance some 1.3 km south of T9, and therefore no interaction is present.

- 9.8.4. As indicated, the Council's response to the further information submission retains the previously asserted position and I note that they included an extract from their Public Road Register which includes 'route information' pertaining to an indicative line running generally north-south and to the west of the locus of turbine T9. It suggests that it is a segment of local tertiary road L-34182 with an average width of 4.80m, although the submission also accepts that this surface may be poor or non-existent.
- 9.8.5. I have reviewed the Council's public road mapping¹⁴ which outlines the extent of roads and road numbers in the charge of Cork County Council. It includes the section of carriageway in question and generally corroborates the information presented in the local authority's submission on the further information response. During my site inspection, I walked c. 1km of this carriageway and agree that the surface is poor and non-existent in places e.g., adjacent to the locus of T9 where it is mostly grassed over.
- 9.8.6. It certainly does not pertain to a width of 4.80m and is generally impassable to what would be considered normal vehicular traffic, except for tractors. Moreover, I note that signage illustrated in historical Google Street View imagery (dated March 2010) directed road users to 'Carrigagulla Stone Circle', near turbine T9, along this route. The signage has since been removed but it appeared to relate to a walking route only.
- 9.8.7. On balance, it is likely that the carriageway in question was once a public road but over time it has been effectively, if not legally, extinguished. There is no reasonable prospect of vehicular traffic proceeding past the farm buildings at the southern extent of the carriageway. Public access has been habitually closed and whilst this is a local authority matter, it would appear in the public interest given the 'road' condition.
- 9.8.8. Moreover, and of determinative significance, whilst I accept that turbine T9 and associated hardstanding marginally encroaches onto a short section of this carriageway, whether that be public road, as stated by the local authority, or forestry or agricultural access track, as suggested by the applicant and as observed during my site inspection, I note that c. 230m of upgraded/realigned access track is proposed.

¹⁴ Cork County Council, 2024. Cork County Road Schedule Viewer. Available at

https://www.corkcoco.ie/en/resident/roads-and-transportation/cork-county-road-schedule-viewer [accessed 25th Oct. 2024]

Sightlines

9.8.9. As considered further in section 10.9 below, I have some concerns regarding the sightlines on exiting Access Point 1 and at the temporary staging area at Drishane Castle demesne. For the reasons elaborated upon below, I recommend that the Board include a condition that requires sightline proposals to be agreed in a Construction Traffic Management Plan (CTMP) in the event of a grant of planning permission.

Conclusion of Traffic and Transport

9.8.10. In such circumstances, I do not recommend the omission of turbine T9. If the Board has any residual concerns, they could be addressed by micro-siting as per section 7.3 of the WEDG, and other consents apply in any event e.g., a road opening licence.

9.9. Other Issues

Community Gain

- 9.9.1. The cover letter accompanying the application states that the applicant expects that the proposed wind farm will contribute €2/MWh of electricity generated into a community benefit fund for the RESS period (i.e., the first 15 years of operation). In addition, it is stated that the developer proposes voluntarily continuing this payment for the remaining lifetime of the wind farm at a rate of €1/MWh which, it is contended, represents a continued and significant socio-economic gain to the local area.
- 9.9.2. Based on an export capacity of between 118MW and 132MW, the cover letter states that the community benefit fund has the potential to deliver over €600,000/year for the first 15 years of operation and over €300k/year for the remaining lifetime of the project.
- 9.9.3. Another aspect of potential community gain associated with the proposed development would be the c. 15km of upgraded or new access tracks developed as walking trail routes throughout the wind farm site, linking to existing sections of the Duhallow Way as well as providing users with a new section of trail to a viewing platform from the Duhallow Way. It is also proposed to connect these trails to existing archaeological features throughout the site and supply archaeological and biodiversity heritage information boards, trail waymarks, trail viewing points as well as a trailhead car park and picnic area. The car park would be provided on the partially reinstated southern construction compound and would provide up to 40 no. parking spaces.

9.9.4. I consider that the above represents a substantial element of community gain which is appropriate to the scale of the development. Whilst I acknowledge some of the commentary in respect of the fund, it is common practice for onshore renewables.

Impact on Property Values

- 9.9.5. A negative impact on property values has been inferred by the observers. This issue is addressed in Section 11.4.4 of the EIAR, where the applicant notes the finding of a US study (Hoen *et al.* 2009, updated in 2013) and a Scottish study (Heblich *et al.* 2016) which both found that there is no evidence of a consistent negative effect on house prices due to the presence of wind turbines. Both studies were based on large sample sizes, with the latter based on analysis of 500,000 property sales between 1990-2014.
- 9.9.6. The EIAR states that there have been no empirical studies carried out in Ireland on the impacts of wind farms on property value and prices. However, based on the international literature and noting both the presence of the existing Boggeragh Wind Farm (1 and 2) in the area and that there is a minimum separation distance of c. 809m from the nearest dwellings, I consider it reasonable to conclude that the proposed development is not likely to result in a significant impact on property values in the area.

9.10. Conclusion on Planning Assessment

- 9.10.1. Having considered each of the substantive issues raised by the observers during the course of the application and having regard to the applicant's response, and comments from the local authority, on balance, I cannot find any justification to recommend a refusal of permission on planning grounds. This concludes my *de novo* assessment of the proposed development, subject to the EIA and AA which follow.
- 9.10.2. I consider that the proposed development, which would address both Ireland's energy security and climate change obligations, accords with relevant planning policy.

10.0 Environmental Impact Assessment

10.1. Statutory Provision

- 10.1.1. The proposed development is of a type and scale that requires environmental impact assessment under the Planning and Development Act 2000, as amended, with the development comprising one which falls within Schedule 5, Part 2, (3)(i) of the Planning Regulations i.e., wind farms with more than 5 turbines or 5MW of output.
- 10.1.2. The planning application is accompanied by an Environmental Impact Assessment Report (EIAR) which was prepared by Fehily Timoney (January 2022). The Further Information Response Report (January 2024) updates the original EIAR document.

10.2. EIA Structure

- 10.2.1. This section of the report therefore comprises the environmental impact assessment of the proposed development in accordance with the Planning Act and associated Planning Regulations, which incorporate the European directives on environmental impact assessment (Directive 2011/92/EU, as amended by 2014/52/EU). Section 172 of the Planning Act defines EIA as:
 - a. consisting of the preparation of an EIAR by the applicant, the carrying out of consultations, the examination of the EIAR and relevant supplementary information by the Board, the reasoned conclusions of the Board and the integration of the reasoned conclusion into the decision of the Board, and
 - b. includes an examination, analysis and evaluation, by the Board, that identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on defined environmental parameters, and which includes significant effects arising from the vulnerability of the project to risks of major accidents and/or disasters.
- 10.2.2. Article 94 and Schedule 6 of the Planning Regulations set out requirements on the contents of an EIAR. This section of the report is therefore divided into two sections.
- 10.2.3. The first section provides an examination of the EIAR and assesses compliance with the requirements of Article 94 and Schedule 6 of the Planning Regulations.

10.2.4. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant effects of it on defined environmental parameters, having regard to the EIAR and relevant supplementary information. It also provides a reasoned conclusion and allows for integration of the reasoned conclusion into the Boards decision, should they agree with the recommendation made.

10.3. Issues Raised in Respect of EIA

- 10.3.1. The main issues raised in respect of EIA by the parties are summarised in section 4.0 above. There is however significant overlap with other issues raised, including concerns regarding public health, amenity (residential and visual) and heritage (cultural and natural) including matters relating to appropriate assessment. Whilst these issues have already been considered and concluded upon in the main planning assessment, they are also considered in the context of the EIA where relevant.
- 10.3.2. For completeness and clarity therefore, the main EIA issues can be briefly stated as:
 - Consideration of cumulative impacts
 - Biodiversity (habitats and species)
 - Groundwater and soil quality
 - Traffic and transportation
 - Cultural heritage
 - Shadow flicker
 - Visual amenity
 - Accident risk
 - Flood risk
 - Noise

10.4. Compliance with Article 94 and Schedule 6 of the Regulations 2001

Article 94 (a) Information to be contained in an EIAR (Schedule 6, paragraph 1)	
A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development (including the additional information referred to under section 94(b).	A description of the proposed development is contained in Chapter 3 of the EIAR including details on the site, surroundings and context, design and layout of the development, and arrangements for construction and protection of the environment during operation as set out in detail in the accompanying outline CEMP. In each technical chapter, where relevant, the EIAR provides details on use of natural resources and the production of emissions and/or waste. It is noted that the proposal does involve some demolition works, including at the temporary staging area (Drishane Castle demesne) and at an existing watercourse crossing/bridge (Ballynagree West Td.), and resource waste is generally addressed in Chapters 3 and 11 with a WMP included in the CEMP in Appendix 3.1.
A description of the likely significant effects on the environment of the proposed development (including the additional information referred to under section 94(b).	An assessment of the likely significant direct, indirect, and cumulative effects of the development is carried out for each of the relevant technical chapters of the EIAR. I am satisfied that the assessment of significant effects is comprehensive and robust and enables decision making.
A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b).	The EIAR includes designed in mitigation measures and other measures to address potential adverse effects identified in technical studies. These, and arrangements for monitoring, are summarised in the relevant topic sections and the CEMP in Appendix 3.1. Mitigation measures comprise standard good practices and site- specific measures and are largely capable of offsetting significant adverse effects identified in the EIAR, except in respect of impact on the local landscape and biodiversity for the reasons stated in the assessment below.
A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment (including the additional	A description of the alternatives considered is contained in Chapter 2 of the EIAR. The EIAR describes the process by which Coillte screened its 441,000ha landholding to identify suitable sites for wind energy development. The application site is one of 5 no. sites for which Coillte is in the process of seeking planning permission. The EIAR describes the alternatives that were considered under the headings of 'do nothing'

information referred to under section 94(b).	'alternative processes – renewable energy technologies', 'alternative layouts and design', 'access track' alternative alignments and operational life alternatives.
	with regard to alternative layouts and design, the EIAR outlines the iterative 'mitigation by design' approach, with set-backs from houses, designated sites, watercourses etc. and consideration of the site characteristics. It also considers scenarios for more smaller turbines versus fewer larger turbines.
	While the observers contend that the EIAR's consideration of alternatives is inadequate or lacking in detail in respect of grid connection, I consider that it clearly and sufficiently outlines the reasonable alternatives that were considered, including a 'do nothing' alternative, and sets out the reasons for selecting the chosen option, based on consideration of the environmental effects.
Article 94(b) Additional information, relevant to the specific characteristics of the development and to the environmental features likely to be affected (Schedule 6, Paragraph 2).	
A description of the baseline environment and likely evolution in the absence of the development.	In each technical chapter of the EIAR details are provided on the existing baseline environment along with a brief description of how the baseline environment is likely to evolve in the absence of the development in the context of the 'do nothing' scenario.
A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved	The methodology employed in carrying out the EIAR, including the forecasting methods is set out, in each of the individual chapters assessing the environmental effects. The applicant has indicated in the relevant chapters where difficulties have been encountered (technical or otherwise) in compiling the information to carry out EIA. I comment on these, where necessary in the technical assessment below and for the reasons stated, I am generally satisfied that forecasting methods are adequate with the exception of ground conditions during the peat probing and test trenching. I also have some reservations regarding the terrestrial habitat surveys, including the information presented at further information stage.
A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major	This issue is dealt with in Chapter 11 of the EIAR. Specific risks have been identified in relation to the project's vulnerability to flooding, fire, major accidents, catastrophic events and landslides. These risks are reasonable and are assessed in my report.

accidents and/or disasters which are relevant to it.	
Article 94 (c) A summary of the information in non-technical language.	This information has been submitted as a separate standalone document ('Non-Technical Summary'). I have read this document, and I am satisfied that the document is concise and comprehensive and is written in a language that is easily understood by a lay member of the public.
Article 94 (d) Sources used for the description and the assessments used in the report	The sources used to inform the description, and the assessment of the potential environmental impact are set out within the various introductory sections to each of the chapters and listed at the end of the EIAR. I consider the sources relied upon are generally appropriate and sufficient other than for example expired documents such as the Cork County Development Plan 2014-2020, however I accept that this was extant when the application was lodged and references to the draft plan have been made, where relevant.
Article 94 (e) A list of the experts who contributed to the preparation of the report	A list of the various experts who contributed to the report are set out in Appendix 1.1 of the EIAR and where relevant the introductory section of each of the chapters also details of the individual's expertise, qualifications which demonstrates the competence of the person in preparation of the individual chapters within the EIAR.

Consultations

- 10.4.1. The planning application and further information was submitted in accordance with the requirements of the Planning Act and Regulations in respect of public notices.
- 10.4.2. Submissions were received from statutory bodies and third parties, including at further information stage, and are considered in this report, in advance of decision making.
- 10.4.3. I am satisfied, therefore, that appropriate consultations have been carried out and that all parties had the opportunity to comment on the proposal. The observer's concern regarding the submission period, did not prejudice them in making their observations. *Compliance*
- 10.4.4. Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and supplementary information provided by the developer is sufficient to comply with article 94 of the Planning Regulations, notwithstanding the observer's concerns.

10.5. Assessment of Likely Significant Effects

- 10.5.1. This section of the report sets out an assessment of the likely environmental effects of the proposal as detailed in the various chapters of the EIAR. These chapters are assessed under the following headings, as set out in Section 171A of the Act:
 - Population and human health (section 10.6).
 - Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (section 10.7).
 - Land, soil, water, air and climate (section 10.8).
 - Material assets, cultural heritage and the landscape (section 10.9).
 - The interaction between these factors (section 10.10).
- 10.5.2. In accordance with Section 171A of the Planning Act, which defines EIA, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR and submissions received and identifies, describes and assesses the likely direct and indirect significant effects (including cumulative effects) of the development on these environmental parameters and the interaction of these. Each topic section is therefore structured around the following headings:
 - Issues raised in submissions/application;
 - Examination, analysis and evaluation; and
 - Direct and indirect significant effects.

10.6. Population and Human Health

Issues Raised

- 10.6.1. Issues raised by the observers include water pollution, noise (including infrasound), shadow flicker, visual impacts (including a negative effect on the local economy), devaluation of property, and regarding the level of pre-application public engagement.
- 10.6.2. Issues initially raised by the local authority included traffic, noise and vibration.
- 10.6.3. I also note that the OPW raised concerns regarding drainage and flooding.

Examination, Analysis and Evaluation

- 10.6.4. Population and human health is addressed in Chapter 11 of the EIAR with regard to potential impacts on population, economic activity and human health and safety etc.
- 10.6.5. Chapter 11 also addresses 'material assets', which I have assessed separately in section 10.9. It includes land use, recreation and tourism, and resources and utilities.
- 10.6.6. Other environmental topics with the potential to impact on population and human health, such as water and air quality, noise, shadow flicker, traffic, landscape and visual impacts, are also assessed separately in the relevant sections of this report.
- 10.6.7. Chapter 11 is supported by:
 - Tables 11-1 to 11-10, and
 - Figures 11-1 to 11-5.
- 10.6.8. I have examined this chapter and the supporting documents. It focuses mainly on the likely effects arising from the proposed development under the following themes:
 - Population;
 - Employment and Economic Activity;
 - Land Use;
 - Recreation, Amenity and Tourism;
 - Human Health and potential for the project to cause accidents and/or natural disasters and the vulnerability of the project to potential disaster/accidents; and
 - Resources and Utilities.

- 10.6.9. The assessment methodology in respect of population includes CSO, Eircode and Geodirectory data, which were surveyed ('ground-proofed') in addition to planning application lists from Cork County Council and An Bord Pleanála. In terms of socio-economic activity, live register and Census 2016 data was utilised. In relation to land use, Corine Land Cover 2018 data was studied and observation was carried out throughout the ground-proofing survey to determine land uses in the study area¹⁵.
- 10.6.10. The assessment methodology in relation to recreation, amenity and tourism was informed by of Fáilte Ireland publications and statistics. In terms of human health, CSO data (2016) and Department of Health (DoH) reports helped establish a baseline health profile of the study area, and desktop studies, field surveys and slope stability assessments were also conducted. Finally, in terms of resources and utilities etc., the methodology included a desktop study of established material assets of the area such as quarries and peat bogs, and engagement with various telecoms companies.
- 10.6.11. I also note that the assessment methodology provides and an acceptable rationale for the consideration of cumulative effects on population and human health within a 20km zone of influence. I specifically note that this equates to the recommended study area for the zone of theoretical visibility (ZTV) for wind farm projects as set out WEDG 2006. *Baseline*
- 10.6.12. The existing environment for each of the themes listed in section 10.6.8 is described in the relevant section of the EIAR. The baseline population statistics (Table 11-2 and Table 11-3) do not show any significant rise or fall in population trends and therefore the study area is considered stable with respect to population growth and population density. Whilst I accept that the population is stable, it is low and possibly vulnerable.
- 10.6.13. In relation to employment, the baseline conditions of the study area indicate healthy socio-economic characteristics, and overall, the EIAR notes that the economic profile of the wind farm site, TDR and grid connection does not show any major differences when compared to the national and county statistics (Table 11-5 and Table 11-6).
- 10.6.14. In terms of land use, the EIAR notes that the wind farm site is located in an area of coniferous forestry and on agricultural lands. There are also areas of peat bog located

¹⁵ Defined in terms of Electoral Divisions (EDs) within which the wind farm site, BEMP lands, grid connection and TDR (excluding areas along the national primary route) are located (see Fig. 11.1).

in proximity to the site and the wider area consists of one-off houses (60 no. dwellings within 1.55km of the proposed wind turbine locations – see Fig. 11-2) and farmsteads.

- 10.6.15. The EIAR indicates that site surveys confirmed the Corine Land Cover (CLC) 2018 data (Fig. 11.4) and the site consists of agricultural areas consisting of pastures (CLC Code 231), coniferous forestry and semi-natural areas (CLC Code 312), transitional woodland scrub (CLC Code 324) and wetlands peat bog (CLC Code 412) and is in close proximity to areas of natural vegetation (CLC Code 243) to the south of the site.
- 10.6.16. The EIAR also notes the proximity of the site to Boggeragh Natural Heritage Area (NHA), a protected upland blanket bog. Additionally, the EIAR notes that the dominant habitat across the BEMP lands is improved agricultural grassland (GA1) with areas of degraded wet heath (HH3) and cutover bog (PB4) also present on some of the lands.
- 10.6.17. Land use along the grid route consists of pasture farmlands with intermittent areas of forestry and one-off houses which the EIAR states is consistent with the CLC data.
- 10.6.18. Land use along the TDR consists of agricultural pasture with intermittent areas of forestry along with areas of natural vegetation and coniferous forestry where the TDR reaches the wind farm site. The land uses along the TDR in the urban area of Millstreet are described as including residential, guesthouses, ecclesiastical uses and retail.
- 10.6.19. In relation to recreation and tourism, the EIAR lists Fáilte Ireland's the top attractions in the Cork area in 2019 including Blarney Castle and other recreation and tourism amenities located in the area including Duhallow Way, a national waymarked trail which passes through areas of Counties Cork and Kerry, and is within the site area.
- 10.6.20. In this regard, the EIAR states that the most significant recreation activity/attractions at the proposed wind farm site is trail walking and hiking whilst some of the existing archaeological sites can be accessed from existing forestry trails and public roads. This was evident during my inspection and I note observers concerns in this regard.
- 10.6.21. Community facilities in the villages close to the wind farm site include churches, national schools, a playground, a post office, a community park, and a health centre. I also note the village of Kilcorney, due north of the site, has a school, church and hall.
- 10.6.22. Community facilities within Millstreet, the nearest town, include medical centre, medical practice, community school, national school and pre-school, church,

playground, town park, post office, Garda station and various town centre shops and services, although I would consider the most convenient shop is located in Macroom.

- 10.6.23. Community facilities in proximity to grid connection point at the Clashavoon substation include a national school, church and sports ground within 1km of the substation.
- 10.6.24. In terms of human health within the study area, the EIAR notes that 90% of respondents to the 2016 Census indicated that their health was 'good' or 'very good' and 1% indicating their health was 'bad'. Less than 0.5% of respondents indicated their health was 'very bad'. Overall, the Census data indicates that the population of the main wind farm site, TDR and grid connection route are generally in good health.
- 10.6.25. With respect to health and safety, the closest Seveso site is located c. 20km northeast at the LP Gas Filling Services lower tier Seveso Site, south of Mallow town. According to GSI's datasets, there has been no landslide events in the area of the proposed wind farm. The most proximate recorded landslide event occurred c. 15km west in the Derrynasaggart Mountains in County Kerry. According to the OPW, no major flood incidents are recorded in proximity to the proposed wind farm site or grid route. A minor flood event was recorded in 2005 adjacent the site on the 'L2758 Butter Road'¹⁶ and events have been recorded along/adjacent to sections of the TDR, however, no flood events have been recorded at the TDR node upgrades where works are required.
- 10.6.26. There is no record of wildfires at the proposed wind farm site, grid route or TDR.
- 10.6.27. In relation to non-renewable resources, the EIAR notes a number of active and historic quarries within 15km of the wind farm site with very low to moderate potential for rock and aggregate across the wind farm site. Other such resources include peat bogs with site investigation revealing that deposits across the site were up to 2m in depth.
- 10.6.28. Identified renewable resources include a significant plantation of commercial forestry which is subject to ongoing maintenance, felling and replanting. Further commercial forestry is present in the wider landscape. Wind resource is above average at the site location. The 2013 Sustainable Energy Authority of Ireland (SEAI) Wind Speed Atlas identifies the site as having an average wind speed of up to 11 m/s at 100m AGL.
- 10.6.29. No significant renewable and non-renewable resources have been identified along the grid connection. Sections of commercial forestry are identified adjacent the TDR.

¹⁶ As noted in section 2.1.4 above, reference to the 'L2758' appears erroneous.
- 10.6.30. The EIAR notes that the Boggeragh to Clashavoon 110kV overhead line (OHL) runs through the northeast of the wind farm site, east of turbine T16 and to the west of T18.
- 10.6.31. No other major utility infrastructure was identified at the proposed wind farm site or along the grid connection route. Some minor utilities and elements of public and private property were identified along the TDR route which will require alteration or removal. This includes temporary removal of street furniture, road signage and overhead utilities and application of load bearing surfaces to existing roundabouts.

Potential Effects

10.6.32. Potential effects, as identified in the EIAR insofar as they relate to population and human health, are summarised in Table PHH1 below. Material assets, including 'land use', 'recreation and tourism', and 'resources etc.', is summarised in Table MA1 below.

Project Phase	Potential Effects		
Do Nothing	• Proposed 118-132 MW wind farm will not contribute to reducing fossil fuel dependency. Net displacement of between c. 132,414 and 148,124 tonnes of CO ₂ /annum will not be achieved further constraining the State from achieving its 80% renewable energy target by 2030.		
	• Opportunities, including additional employment, economic activity, recreation and community infrastructure (Community Benefit Fund, CBF), and development contributions and commercial rates, would not be realised.		
Construction	• Population: Potential to create c. 126 and 188 direct and indirect jobs (based on variables of 1.07 and 3.2 jobs/MW and a two-year construction phase). Average workforce of 30 direct employees anticipated (60 during peak periods). Likely that some workers will stay in local accommodation resulting in a slight, short-term neutral impact, however, unlikely that a permanent impact will occur, in terms of population trends or density.		
	• Employment and Economy: Likely that there will be direct employment for people living in the area and materials will be sourced in the general locality, thus helping sustain local economy. Slight indirect positive economic impact due to the influx of workers. Short-term, significant positive impact on employment and a short-term slight, positive impact on local services in local towns and villages.		
	• Human Health: Risk to construction workers has potential to cause significant impact on human health in the short-term. Potential health and safety hazards may occur on public roads and adjacent land uses including agricultural and forestry lands and associated recreation uses resulting in temporary significant negative impact on human safety. Potential temporary moderate, negative impact to public safety along the TDR and grid routes. Potential human safety risks associated with component delivery (abnormal loads) including traffic safety and pedestrian safety at special manoeuvring points. This has potential for temporary significant, negative impacts to human safety. Potential impacts on air quality due to construction emissions and on the nearest receptor is imperceptible, and brief to temporary slight, negative along the grid route. Potential impacts from noise at the wind farm and along the TDR is expected to be temporary slight, negative on nearby residential receptors. Noise impacts along the grid route has potential to cause temporary significant, negative impact at nearby dwellings, albeit not		

	over an extended period at any one location. Potential imp with land, soils and geology relate to potential contamination which can be caused by spills, landslides etc. Furthermore, the potential to cause injury and fatality. Potential impacts hydrology relate to standing water caused by blocked drai has potential to cause drowning with particular risk to worker potential for blockage of roadside drains causing potential however the likely impact of flooding on human health and s of construction activities is therefore temporary and imperce	acts associated of groundwater landslides have associated with ns etc. and this rs. There is also hazard to traffic afety as a result optible.
Operation	Population: Creation of between 35 and 47 long-term jobs on installed capacity of 118-132MW however population impacted upon as further works and activities are not envise	expected based unlikely to be aged.
	Employment and Economy: Potential to contribute to betwee the required capacity (c. 4GW) to achieve the 2030 nation further savings from the displacement of fossil fuel imports positive medium to long-term economic impact. Som anticipated (based on variables of 0.3-0.4 jobs/MW) wi indirect, long-term slight, positive impact on employment nearby towns and wider area. Rates and development payments is likely to have a slight positive, long-term impact of the local authority. Anticipated that the CBF has potentiat €600,000/year for the first 15 years and over €300,00 remainder with a significant long-term, positive impact economic profile through regular payments to near neighbour for projects which will benefit the whole community. Fi assumes that the provision of a wind farm at the proposed not impact on the property values in the area and will have imperceptible impact, based on available international litera	en 2.95-3.3% of onal target with likely to have a ne 35-47 jobs th potential for in the locality, ent contribution ct on resources al to deliver over 00/year for the on the socio- rs and providing nally, the EIAR d location would ave a long-term ture.
	Human Health: Potential issues can occur due to the falling blades in cold weather conditions, albeit unlikely due to Potential impacts associated with working at heights, steep voltage electricity etc. albeit unlikely with qualified work protocols. New/upgraded tracks have potential to provi moderate, positive impact to human health in the locality. there will be a slight to moderate significance of impact, closest to the project with a long-term moderate significant terms of noise but overall, a long-term, imperceptible, ne human health in proximity to the wind farm site is anticipated residential properties is envisaged as the ICNIRP guid exceeded and therefore potential impact to human health electromagnetic interference will be negligible and imperce potential for significant natural disasters related to extrem however consequences from flooding has potential to be s unlikely and negligible. Consequences from fire has significant and negative, resulting in potential injury or fa damage, and damage to ecosystems etc. Negligible potential were ruled out at the proposed infrastructure locations.	ice from turbine to sensors etc. gradients, high- iers and safety de a long-term Expected that with dwellings ice of impact in utral impact on d. No impact on delines are not in as a result of eptible. Limited the temperatures ignificant, albeit potential to be atality, property potential risk of t stability issues
Decommissioning	Population: Similar impacts to the construction phase be magnitude due to less construction workers. So accommodation will still be required but unlikely to result in impact in terms of population trends and density. Grid following decommissioning – no impacts expected on grid re	ut of a reduced me temporary any permanent route to remain pute or TDR.
	Employment and Economy: Similar impacts to the constru- of a reduced magnitude due to less construction worke indirect positive impact on local businesses contributin economy, similar to that of the construction phase but of less	ction phase but rs. Short-term g to the local sser magnitude.

	Temporary to short-term slight, positive impact associated with the employment of construction workers within the vicinity of the development.
	• Human Health: Similar to those associated with construction phase. Potential for significant impact to human health and safety for construction workers on site. Potential impact to public health and safety during the decommissioning phase is considered temporary moderate and negative.
Cumulative	• The list of all projects considered for the cumulative assessment are included in Appendix 1.2 of Volume 3 of the EIAR.
	• Cumulative impact with Boggeragh Wind Farm on forestry land is expected to be long-term slight and negative but overall neutral due to replanting.
	• Cumulative visual impacts with Boggeragh Wind Farm (1 and 2) on residential amenity is considered long-term, non-significant and negative given the setback distances.
	• Cumulative noise impacts with adjoining and adjacent wind farms comply with the WEDG 2006 limits however there will be a slight to moderate significance of impact for some receptors and a long-term moderate significance of impact for the closest dwellings.
	• Cumulative impact on human health and residential amenity from the simultaneous construction of the proposed development and Carragraigue Solar Farm is considered temporary, non-significant and negative.
	• The low number of HGV trips associated with the substation extension and battery storage in combination with the rolling nature of the proposed grid route works will not result in significant impact on residential amenity at dwellings along the proposed grid route.
	• The EIAR also identifies potential for negative cumulative effects on traffic from the simultaneous construction of the proposed development and Knockglass Solar Farm. In-combination effect on residential amenity as a result of noise and dust also identified. However, I note that this solar farm is since built and commissioned.

 Table PHH1: Summary of Potential Effects

Mitigation

- 10.6.33. In terms of population, the EIAR does not predict any significant impacts on trends or population density and therefore it states that no mitigation measures are required.
- 10.6.34. With regards employment and economy, the EIAR notes that the potential impacts are predominantly positive and therefore no mitigation measures are deemed necessary.
- 10.6.35. In terms of human health, the EIAR states that best practice site safety and environmental management will be maintained and the potential for impact during construction and decommissioning is expected to be not significant and temporary to short-term. Similarly, appropriate site safety measures will be utilised during the operational phase, including training and use of PPE etc. Public access will be restricted and trails closed with directional and warning signage provided during construction and decommissioning. Garda escort will be requested for turbine delivery and a turbine delivery plan will be utilised. The potential for impact on human health

for members of the public during construction and decommissioning is expected to be not significant and temporary to short-term following mitigation. During operation, the substation will be fenced off, underground cabling marked, lighting rods and ice detection systems installed on each turbine, in addition to a maintenance schedule. Site drainage will mitigate against any potential flooding risk. Shadow flicker detection systems will be installed on all turbines in order to reduce potential occurrences on nearby receptors and some turbines may be operated in noise reduced modes.

Residual Impacts

- 10.6.36. In terms of population, the EIAR identifies the main residual effect being that associated with the operation and maintenance jobs during the operational phase, however, any impact in terms of changes to population trends will be imperceptible.
- 10.6.37. With regards to employment and economy, the EIAR considers the residual impact as long-term significant and positive. This is based on construction worker spend in the local area, benefits from the CBF, payment of rates and development contributions and the reduction in the cost of electricity and less dependency on fossil fuels.
- 10.6.38. With regard to human health, negative residual impact is expected to be imperceptible due to setback distances from nearby dwellings, the use of shadow flicker detection systems, and noise control measures to reduce potential noise impacts on nearby receptors. Furthermore, the EIAR states that mitigation measures as set out throughout the report will prevent any potential significant negative impacts on human health during the construction and decommissioning phases and in this regard, I note the content of the slope stability assessment and flood risk assessment, as updated.

Assessment of Direct and Indirect Significant Effects

10.6.39. Construction of the proposed wind farm development would result in substantial investment in the area with employment opportunities for construction workers and secondary benefits for local services and materials providers. Given the short-term nature of the construction phase I do not consider that there would be any significant impact on the population or economy during the construction phase. In the operational phase, the development would generally be unmanned other than for maintenance and repair work and thus no significant employment or population impacts are likely.

- 10.6.40. The applicant contends that there will be a significant positive socio-economic impact as a result of the Community Benefit Fund that will be required under the RESS and as a result of rates and development contributions. I agree with this assessment.
- 10.6.41. I have addressed the potential impact on property values separately above where I concluded that, based on the international literature and noting both the presence of the existing Boggeragh Wind Farm (1 and 2) in the area and the minimum 809m separation distance from the nearest dwelling, it is reasonable to conclude that the proposed development is not likely to result in a significant impact on property values.
- 10.6.42. With regard to human health, I have addressed potential health-related issues such as water pollution, noise, shadow flicker etc. elsewhere in this report. Given the nature of the proposal there is potential for significant health and safety impacts during the construction and decommissioning phases, however I am satisfied that the mitigation measures, including the CEMP, adequate training and good practice construction methods, are capable of mitigating these impacts to an acceptable residual level.
- 10.6.43. The issue of major accident hazards is also considered in the EIAR. John O'Sullivan (Brookpark) raises concerns regarding peat slippage in this regard, referencing such an event in Co. Donegal. I address this under 'soils and geology' (see section 10.8) with accident and disaster risk considered more generally in section 10.11 of the EIA.

Overall Conclusion on Population and Human Health

10.6.44. I have considered all of the written submissions made in relation to population and human health and the relevant contents of the file including the EIAR. I consider that the proposal will have significant positive impacts on the local socio-economic environment. I am also satisfied that the potential for significant adverse impacts on population and human health can be avoided, managed and mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposal would not have any unacceptable direct, indirect or cumulative impacts on population or human health.

10.7. Biodiversity

Issues Raised

- 10.7.1. As noted above, the observers have raised general concerns in respect of natural heritage and whilst the issues related to European sites have been fully considered in the AA, including the AA screening, as set out in section 11 of this report, the potential for significant effects on biodiversity are addressed in this section of the EIA.
- 10.7.2. Whilst I note that the Department for Housing, Local Government and Heritage (DHLGH) Development Applications Unit (DAU) did not comment on the application, they did provide detailed comments to the applicant at the project scoping stage¹⁷.
- 10.7.3. These generally relate to the proximity of the site to the Mullaghanish to Musheramore SPA and Blackwater River (Cork/Waterford) SAC, albeit referred to as a candidate SAC. Specific concerns related to the hen harrier and the suitability of habitat at the locus of turbines T2, T12 and T16 of the 'scoped scheme'. I note that these locations are proximate to T2, T13 and T17 of the proposed development. Geotechnical risks (soil slippage), siltation or increase in contribution to hydrographic peaks in the downstream watercourses that contribute to the SAC were also raised. Other protected species, including freshwater pearl mussel, golden plover, Kerry slug and marsh fritillary were also noted, and are amongst the species listed by the observers.
- 10.7.4. The local authority raised similar concerns regarding the loss of high value ecological habitat and remained of the view that 4 no. turbines, namely T2, T3, T13 and T17, should be omitted, notwithstanding the applicant's further information response. The Council also raised concerns regarding the impact on hen harrier and golden plover.
- 10.7.5. I also note the IFI comments regarding the aquatic environment (see section 4.2.4).

Examination, Analysis and Evaluation

- 10.7.6. Biodiversity is addressed in Chapter 8 of the EIAR, which is divided into two parts.
- 10.7.7. Chapter 8A is entitled 'Biodiversity'. It examines the potential impacts on terrestrial habitat and species that may arise as a result of the proposal. It is supported by:

¹⁷ See Appendix 5.1 (letters dated 31st August 2020 and 19th April 2021).

- Appendix 8A.1 to 8A.8,
- Figures 8A.1 to 8A.21,
- Tables 8A.1 to 8A.28,
- Plates 8A.1 to 8A.12, and
- the further information response (Section 3.4.1.1 and Appendix 6).
- 10.7.8. Chapter 8B is entitled 'Aquatic Ecological Assessment'. It examines the potential impacts of the proposal on aquatic habitat and species. It is supported by:
 - Appendix 8B.1 to 8B.3,
 - Figures 8B.1-1, 8B.2-1, 8B.2-2, 8B.2-3, 8B.3-1, 8B.4-1 and 8B.5-1,
 - Tables 8B.2-1, 2-2, 8B.4-1, 8B.4-2, 8B.5-1 and 8B.7-1, and
 - Plates 8B.4-1 to 8B.4-41.
- 10.7.9. A Natura Impact Statement (NIS) was also submitted with the application, and I have addressed the issue of appropriate assessment separately in section 11 of this report.
- 10.7.10. I have examined these chapters and the supporting documents. The assessment is undertaken having regard to the requirements for the protection of habitats, species and biodiversity, as set out in international, European and national legislation and national and local policy, and government and industry guidelines for EIA and EcIA¹⁸.
- 10.7.11. Assessment methodology includes field surveys and desktop study. Terrestrial biodiversity field surveys were undertaken from 2017 to 2021¹⁹. They include:
 - Avifauna (Vantage Point and Hinterland) Surveys (March 2017 to March 2021)
 - Avifauna (Red Grouse Tape Lure) Survey (March 2019)
 - Avifauna (Transect and Point Count) Surveys (May 2017 to February 2020)
 - Habitat and Flora Surveys (August 2018 to November 2020)
 - Non-Volant Mammal Surveys (February 2018 to October 2019)
 - Bat Surveys (June 2017 to June 2020)
 - Turbine Areas, Habitats and TDR/Grid Connection Survey (June to October 2021)

¹⁸ Ecological Impact Assessment.

¹⁹ See Appendix 8A.1 of the EIAR.

- 10.7.12. Surveys of the aquatic sites within the vicinity of the proposed development were conducted in June-July 2020, June 2021 and December 2021²⁰. The surveys focused on both instream and riparian habitats upstream and downstream of sampling points.
- 10.7.13. No major site-specific difficulties were encountered in completing the field surveys for the terrestrial biodiversity assessment (section 8A.4) nor significant constraints noted in terms of data collection to inform the aquatic and fisheries surveys (section 8B.4).
- 10.7.14. I have also examined the further information response which effectively updates this chapter of the EIAR by providing the requested commentary in respect of the above ecology concerns. I refer to the further information in my assessment, where relevant.
- 10.7.15. In summary, the further information response restates that the proposed development was designed with the siting of the turbines determined by an iterative process and suggests that the local authority comments in respect of turbines in upland peat areas (i.e., turbines T2, T3, T13 and T17) are at odds with precedent examples within the county. It concludes that Cork County Council's objection in principle to locating turbines in upland peat areas is not consistent with European Council Regulation (EU) 2022/257711, in particular by seeking to afford strict protection to all habitats it is not proportional or balanced and ignores the principles identified in the Habitats Directive.

Baseline

- 10.7.16. The baseline terrestrial ecological environment is described in section 8A.3 of the EIAR. It notes that there are no European sites overlapping the wind farm site, grid connection or BEMP lands and no works proposed along the TDR close to a number of SACs and one SPA. The closest European site is identified as Mullaghanish to Musheramore Mts. SPA (004162) which adjoins the terrestrial study area²¹ but is c. 360m to the southwest of the site boundary and c. 500m from the nearest turbine (T2).
- 10.7.17. The EIAR states that the turbines to the northeast are located within the catchment of the Blackwater River. The Blackwater River (Cork/Waterford) SAC (002170) is c.3.4km northeast of the site boundary and c. 3.5km from the nearest turbine (T20). The EIAR identifies these as the only Natura 2000 sites within 5km of the study area and

²⁰ See Appendix 8B.1 of the EIAR.

²¹ This generally corresponds to the wind farm site boundary i.e., lands outlined in blue on the location maps.

grid connection. Section 8B.3.1 notes the importance of the latter's aquatic environment being one of Ireland's largest rivers and draining five mountain ranges.

- 10.7.18. In addition to Mullaghanish to Musheramore Mts. SPA and the Blackwater River SAC, the Gearagh SPA (004109) is also identified for potential indirect negative effects.
- 10.7.19. Finally in terms of designated sites, the EIAR states that the Boggeragh Mountains NHA (002447) overlaps the northern part of the study area. Indeed, it intersects the site boundary, along Seefin ridge and near Knockduff Mountain. The closest turbines are T14 (Seefin ridge) and T20 (Knockduff Mt.), within 220m and 110m, respectively.

Terrestrial Habitat

- 10.7.20. The Habitat Map (Fig. 8A.10) details the main habitats within the study area. The EIAR notes the presence of two habitats listed on Annex I of the EU Habitats Directive, namely northern Atlantic wet heaths with *Erica tetralix* (4010) and European dry heath (4030). An eroding upland stream (FW1), which the EIAR states may correspond to the Annex I habitat 'Watercourses of plain to montane levels with the *Ranunculion fluitantis and Callitricho-Batrachion* vegetation (3260)', was also identified. It is stated that none of these habitats occur inside the proposed development works footprint.
- 10.7.21. The dominant habitats within the works footprint are noted as:
 - Commercial Conifer Plantation (WD4)
 - Improved Agricultural Grassland (GA1)
 - Semi-natural to semi-improved Wet Grassland (GS4) including Wet Grassland/Poor Fen and Flush (GS4/PF2)
 - Wet Heath and Cutover bog (HH3/PB4) Mosaic
 - Wet Heath (HH3)
 - Buildings and Artificial Surfaces (BL3).
- 10.7.22. No botanical species protected under the Flora Protection Order (FPO), as amended, 2015, listed in Annex II or IV of the EU Habitats Directive (92/43/EEC), or red listed in the Irish Red Data Books were recorded within site boundaries, according to the EIAR. I also note that FPO listed mosses and liverworts supporting peatland habitat was subject to detailed quadrat surveys during which no such bryophytes were recorded.

- 10.7.23. No rare or protected flora were recorded within the study area. There are no documented records for vascular plant species as held by the NBDC for the relevant 10km Grid Square (W38) that overlaps the proposed wind farm development footprint. Whilst three records for rare or protected mosses, namely Big-spored Rock Moss, North Grimmia and Large White-moss (Annex IV of the Habitats Directive) were documented, the EIAR notes these NBDC records date from 1851, 1880 and 1967.
- 10.7.24. Whilst the vascular plant Heath Cutweed is documented for the 10km Grid Square (W37) associated with the grid connection, it was not recorded along this route. Similarly, Mudwort, which is typically associated with nutrient rich, mildly acidic mud and shingle adjacent to watercourses, is unlikely to occur along the grid route and was not recorded for the areas associated with water crossings via HDD. Round-leaved Cranes-bill, a species of dry, calcareous, grassy habitat is also documented but unlikely to be supported by the dominant habitat (buildings and artificial surfaces BL3).
- 10.7.25. Invasive species, including Japanese knotweed and Rhododendron, were also noted.
- 10.7.26. The EIAR indicates that the layout was designed to minimise the direct and indirect impacts upon any Annex I habitats present in the study area by carrying out detailed micro-siting surveys. Survey areas where concerns were raised, are assessed below. Birds
- 10.7.27. The results of four number breeding seasons vantage point (VP) surveys are set out in Appendix 8A.4 of the EIAR. These results are summarised in section 8A.3.3.1. Annex I bird species recorded during the breeding season included hen harrier, peregrine falcon, golden plover, merlin, marsh harrier and white-tailed sea eagle.
- 10.7.28. The results of four number winter season VP surveys are set out in Appendix 8A.5 of the EIAR. These results are summarised in section 8A.3.3.3. Annex I species included hen harrier, peregrine falcon, golden plover, merlin, red kite and white-tailed sea eagle.

<u>Hen Harrier</u>

- 10.7.29. Hen harrier are an SCI species of the Mullaghanish to Musheramore Mountains SPA.
- 10.7.30. I note that hen harriers were recorded during each breeding season but activity level was less than 1.5% of total survey time, and primarily related to foraging and commuting at heights of less than 30m. It is stated that these flightlines are associated with a known nest site to the southeast near the Dooneen Hill area. The EIAR states

that no nesting activity took place at, or within 2km of, the study area boundary in any of the survey years and a decline in activity was observed. The predominant habitat where hen harriers were recorded was heath/bog, conifer plantation and grassland.

- 10.7.31. I also note that dedicated hinterland surveys for hen harrier were completed during the 2017-2020 breeding seasons. A total of five nest sites were recorded within 5km of the study area, albeit none within 2km. Whilst there is a serious overall decline in hen harrier population, the EIAR notes that there was an increase in nesting pairs in 2020.
- 10.7.32. In terms of winter season VP surveys, the EIAR states that hen harriers were recorded during each winter season but activity was less than 0.7% of the total survey time, and related primarily to foraging and commuting, generally at heights of less than 25mAGL. The main habitat where hen harriers were recorded was heath/bog, conifer plantation and grassland. The EIAR states that overall activity levels appear relatively stable, noting a drop-off in on site activity balanced somewhat by an increase in offsite activity.

Golden Plover

- 10.7.33. Golden plover is a bird species associated with the Boggeragh Mountains NHA.
- 10.7.34. Regarding the breeding season, I note activity was observed in all survey years apart from summer 2017. Flock size ranged from 3-200 birds and flight heights were typically over 80mAGL. The EIAR notes that this Annex I species was generally associated with upland bog/heath and wet grassland habitat in the north and northwest of the study area where the expansion northwards in 2019 resulted in an increase in observations of this species i.e., 7% of the survey time in the 2020 breeding season.
- 10.7.35. The EIAR notes that golden plover was the most commonly recorded species during the winter VP study where flock size ranged from 1-500 birds. This species was typically recorded resting on heath/bog or flying over bog, pasture and conifer plantation associated with upland areas of the site, as well the southwestern area. Flight heights were typically less than 100m, although ranged as high as 200m.

Other Annex I Birds

10.7.36. Other Annex I birds recorded during the breeding season include peregrine falcon and merlin, accounting for less than 0.7% and 0.02% of the total survey time, with a number of 'off-site' sightings of peregrine falcon associated with Musheramore Mountain, a marsh harrier recorded in May 2019 and a white-tailed sea eagle in March 2020.

- 10.7.37. Peregrine falcon was also recorded in the study area during all winter VP survey years, but activity levels were generally less than 0.5% of total survey time. Similarly, merlin activity was limited on site to the 2020/21 winter season. The EIAR notes that the white-tailed eagle sighted in March 2020 was observed on and off site, soaring at heights of 40-250m and clarifies that this is the same eagle noted immediately above.
- 10.7.38. I note that an additional Annex I species was observed during the winter VP surveys, namely a red kite, albeit a single occurrence at heights of 80-100m and 150-200mAGL.

Other Birds

- 10.7.39. Section 8A.3.3.4 of the EIAR notes that a total of 44 no. avian species were recorded during the dedicated breeding season transect and point count surveys (Table 8A.9) and an additional 22 no. species were recorded on a casual basis (Table 8A.10).
- 10.7.40. The amber list species included black-headed gull, goldcrest, greenfinch, house martin, house sparrow, herring gull, lesser black-backed gull, linnet, mallard, sand martin, skylark, spotted flycatcher, starling, swallow, wheatear and willow warbler. The red list species included grey wagtail, kestrel, meadow pipit, redwing, snipe and swift.
- 10.7.41. Section 8A.3.3.5 of the EIAR notes that a total of 33 no. avian species were recorded during the dedicated winter season transect and point count surveys (Table 8A.11) and an additional 20 no. species were recorded on a casual basis (Table 8A.12).
- 10.7.42. Amber list birds include cormorant, goldcrest, greenfinch, house sparrow, lesser blackbacked gull, linnet, mallard, starling and swallow. Red list birds include grey wagtail, kestrel, lapwing, meadow pipit, redwing, snipe, stock dove, swift and woodcock.
- 10.7.43. Raven was also identified, and I sighted a pair along Seefin ridge during my visit, however I did not casually observe any other listed species in the upland site areas.
- 10.7.44. No red grouse responses, signs or sightings were recorded during the dedicated tapelure field survey in late March 2019. This species was, however, confirmed with a total of 11 no. sightings primarily in the winter months from January 2019 and March 2021.
- 10.7.45. The EIAR also notes that 6 no. additional avian species have been recorded historically within the 10km grid (NBDC ref. W38) overlapping the study area, namely brambling, moorhen, curlew, long-eared owl, short-eared owl and yellowhammer, with curlew and yellowhammer red-listed as birds of high conservation concern in Ireland.

- 10.7.46. There are no known barn owl sites within the study area. The closest, an active nest site, is over 2km away, and no other sites on the BWI²² database are within 5km of the study area. Although it cautions against treating this as a complete assessment.
- 10.7.47. Finally, the aquatic surveys recorded a kingfisher on the Awboy River at Awboy Bridge. Mammals excl. bats
- 10.7.48. In terms of non-volant mammals, the EIAR states that fox and Irish hare were seen and their signs observed more frequently than any other mammal species during the site visits but none of the active dens were located within 50m of any turbine location.
- 10.7.49. Badgers were also widely observed, however the EIAR states that the burrow systems recorded are more than 50m from any turbine location and other associated wind farm infrastructure and the assessment of accessible areas within 50m of turbines did not record any evidence of the presence of breeding places of protected mammal species.
- 10.7.50. The EIAR notes that the trail camera analysis (Table 8A.13) confirms the field walkovers in terms of the prevalence of fox, Irish hare and badger. Other recorded mammals included red squirrel and red deer, and possibly sika or fallow deer, but overall, the EIAR states that there was a relatively low rate of occurrence of non-volant mammals in the photographic record given the prolonged periods of deployment.
- 10.7.51. There was also good general agreement with the information collected as casual records (Table 8A.15) with that compiled from the walkover and trail camera surveys. Other mammals included pine marten, stoat, hedgehog, an unidentified shew species and possibly a feral goat. I observed a feral goat present near the locus of turbine T1.
- 10.7.52. The EIAR states that there was no evidence of otter in the study area and whilst they possibly occur on the River Laney, no sightings, scats, couches, or holts have been recorded. The aquatic ecology surveys in the wider area also recorded no evidence.
- 10.7.53. The species recorded historically within the 10km grid square (NBDC ref. W38) are listed in Table 8A.16 and include otter, mink, sika deer and a single record of a feral ferret although these individuals are believed to be the result of escapes or deliberate releases and there is no known persisting wild population in this part of County Cork.

²² Bird Watch Ireland.

10.7.54. The conservation status of non-volant mammals confirmed at the study area and/or historically in the NBDC grid is summarised in Table 8A.17. None of the species are currently of conservation concern in Ireland. Otter is listed on Annex II and Annex IV of the Habitats Directive as a species requiring SAC designation and in need of strict protection. Irish hare and pine marten are both listed on Annex V of Habitats Directive as a species can be undertaken to ensure that its exploitation and taking in the wild is compatible with maintaining it in a favourable conservation status.

Bats

- 10.7.55. The desktop study found that 5 no. species of bat have been historically recorded in the 10km grid square (NBDC ref. W38), namely brown long-eared bat, Daubenton's bat, Leisler's bat, common pipistrelle and soprano pipistrelle. Records of known roosts from the Bat Conservation Ireland database is listed in Table 8A.18 of the EIAR.
- 10.7.56. Active surveys included dusk emergence surveys within and adjacent to the study area, including old buildings and bridges. One confirmed roost was located in an old farmhouse where the nearest proposed turbine, T10, is located c. 700m to the southwest. No evidence of any other active roost site was recorded from these walkovers. The known historical bat roost sites in the wider area are illustrated in Figure 8A.13.
- 10.7.57. The EIAR states that general activity during surveys was relatively low with common pipistrelle the most frequently recorded species in 2017, 2018 and 2019. Two other species were recorded on the active surveys in 2017, namely soprano pipistrelle and Leisler's bat with similarly low numbers of registrations in 2018. Notably, Daubenton's bat was registered at two locations along the River Laney at the centre of the study area in 2018. There were three additional Myotis species records, but these were either too brief or faint to be definitively identified to species. The 2019 surveys recorded a similar diversity and relative abundance of bats to the previous years.
- 10.7.58. Passive bat detector surveys results (Table 8A.19) note the presence of common pipistrelle and soprano pipistrelle, Leisler's bat, brown Long-eared bat, whiskered bat, Daubenton's bat, Natterer's bat and the lesser horseshoe bat, which the EIAR considered notable given its distribution and decline across Europe, in addition to registrations of pipistrelle and Myotis that could not be definitively identified to species.
- 10.7.59. Adapted passive bat detector surveys results (Tables 8A.20 to 8A.23) note a moderate to high level of bat activity at the site, and a high level of species diversity. Species

recorded during the 2019 and 2020 surveys reflect the 8 no. species listed above. The EIAR also notes that nathusius pipistrelle may occur in the area, albeit unconfirmed.

- 10.7.60. Bat activity is also shown to be notably higher in the northern block of the study area.
- 10.7.61. Finally, the EIAR states that the 80m met mast was utilised to install a microphone at 55mAGL during the spring 2020 and summer 2020 bat detector surveys and a second microphone was placed at ground level to allow direct comparison of activity levels. During the 10-night survey period in spring 2020, 113 bat registrations were recorded at height, compared with 2,107 at ground level with common pipistrelle accounting for 97.3% of registrations. During the 10-night survey period in summer 2020, no bat registrations were recorded at height while 1,623 registrations were recorded at ground level. Although it cautions against applying this data throughout the study area.

Other Protected Fauna

- 10.7.62. The EIAR notes that marsh fritillary larval webs were confirmed at two of the dedicated survey areas with three casual observations noted from other terrestrial biodiversity surveys. It also notes that two historical records are known for the 10km grid overlapping the study area (NBDC ref. W38) and suggest that this legally protected butterfly species has persisted at the study area and locality for several decades.
- 10.7.63. A total of 33 'other taxa' fauna species were recorded on a casual basis during terrestrial biodiversity surveys at the study area (Table 8A.24). Species include common lizard, frog, and various species of butterfly, moth and bee, a damselfly, and other insects. No 'other taxa' species of conservation concern were recorded.
- 10.7.64. The EIAR does, however, note that one additional protected 'other taxa' species has been recorded historically within the 10km grid square surrounding the study area (NBDC ref. W38), namely the Kerry slug. This species is listed on Annexes II and IV of the Habitat's Directive and is protected under the Wildlife Acts. However, no observations of this species were recorded during the terrestrial biodiversity surveys.

Turbine Delivery Route

10.7.65. The EIAR considered the various POIs along the TDR, with those areas included within the application site boundary, in addition to TDR-POI-40 and 46, identified as having potential for ecological impacts. The results are summarised in Table 8A.25 with no further assessment required for the majority, however TDR-POI-2, 6, 7, 32 and

38 required further consideration and are summarised in section 8A.3.7. I note that interventions primarily involve laying overrun areas and tree canopy trimming.

Grid Connection

- 10.7.66. The EIAR states that no Annex I habitats are present within the works footprint of the proposed grid connection route and for the vast majority of the route the grid cable will be buried in the tarmacked road surface and therefore the dominant habitat is buildings and artificial surfaces (BL3) of no particular ecological value at present, while adjacent verges, hedgerows and occasional treelines are of higher local importance. Improved or semi-improved fields associated with the river crossings are lower local importance.
- 10.7.67. A total of 13 no. watercourse crossings are identified along the grid connection route, including 3 no. bridge crossings and 1 no. large culvert by horizontal directional drilling.

Aquatic Ecology

- 10.7.68. The results of the aquatic ecology surveys are detailed in section 8B.4 of the EIAR and evaluated in section 8B.4.4. I note that a total of 14 (36% of) survey locations did not support fish at the time of survey (i.e. non-perennial/seasonal channels). Where fish were present, brown trout dominated, with low abundances of European eel in addition to a single Atlantic salmon (via electro-fishing) on the River Laney at Knocknagappul Bridge and *Lampetra* larvae at a single site (Carrigthomas Stream²³).
- 10.7.69. The EIAR states that no freshwater pearl mussel or white-clawed crayfish were recorded during the aquatic surveys. Aquatic vegetation communities representative of the Annex I habitat 'Watercourses of plain to montane levels with the *Ranunculion fluitantis and Callitricho-Batrachion* vegetation and aquatic mosses (3260)' ('floating river vegetation') were recorded on the Glen River, the Awboy River and River Laney.
- 10.7.70. A total of 18 survey sites achieved 'good status' (≥Q4). Three unnamed River Laney tributaries achieved high status (Q4-5) water quality. Two sites were of poor status (Q3). Siltation and afforestation pressures were evident on numerous watercourses within the survey area which were not achieving good status according to the EIAR.

²³ Referred to on OSI mapping as Glashreagh River. I note references throughout Chapter 8B to an 'unnamed Carrigthomas Stream tributary (GCR-WCC19)' where HDD is also proposed, although a standard box culvert is proposed in Chapter 10 of the EIAR.

- 10.7.71. A survey site on the Glen River was located within the Boggeragh Mountains NHA (0002447) and therefore considered of national importance. None of the other survey locations were evaluated as being of greater than local importance (higher value).
- 10.7.72. Over half of the sites (22 no.) in the vicinity of the proposed wind farm were evaluated as being of local importance (higher value) in terms of their aquatic ecology, primarily due to the presence of overall moderate to good salmonid habitat and the presence of brown trout at the survey sites, in addition to good status (Q4) water quality. A total of 16 no. sites were evaluated as being of local importance (lower value) in terms of aquatic ecology due to low/lack of fisheries value, in addition to poor or moderate water quality (i.e. ≤Q3-4) and absence of other species/habitats of high conservation value.

Potential Effects

10.7.73. Potential effects, as identified in the EIAR, are summarised in Table B1 below.

Project Phase	Potential Effects
Do Nothing	Conifer plantation would continue to be managed as rotational forestry and agricultural lands would be similarly managed with some marginal farmland drained/areas of pasture extended, use of fertilisers and herbicides etc. Improved grassland, as well as mature conifer plantation is considered of low biodiversity value. Periodically, areas of clearfell and young open-canopy conifers may be attractive to nesting and roosting hen harrier.
	• Would result in water quality, hydrological regimes and the aquatic ecology of the receiving watercourses remaining consistent with pre-development levels. Agricultural and afforestation pressures would continue to pose a threat to water quality within the wider catchment.
Construction	• Designated Sites: No risk of potential direct effects on any European site but likely significant effects on the QIs of the Mullaghanish to Musheramore Mts. SPA, Blackwater River (Cork/Waterford) SAC and The Gearagh SPA from land-take / excavations; physical changes to the environment / environmental pressures; emissions to air (dust) and water; noise emissions; waste emissions; transport requirements, duration of construction, operation, decommissioning; and in-combination effects (see section 11).
	 Habitats and Flora: Slight negative impact from permanent increase in modified habitat; buildings and artificial surfaces (BL3). Permanent loss of local importance (lower value) commercial conifer plantation (WD4) and improved agricultural grassland (GA1) habitat will lead to a neutral-imperceptible impact at the local scale. Removal of semi-natural habitats will have a long-term significant negative impact at the local scale due to permanent loss of a habitat type that is of local importance (higher value). Excavations etc. could impact drainage/hydrological functionality of adjacent peatland and heathland ('T2, T12 and T17'²⁴), lead to deterioration of habitat quality and potential indirect habitats of higher local importance to national importance, contributing to a significant negative impact at the local scale. Potential impact from the spread of invasive species is considered to be long

²⁴ Reference to turbine T12 in Section 8A.6.2.2 of the EIAR appears erroneous and should state 'T13'.

term significant negative at the local scale but could lead to a significant negative impact at the local to international scale given the location of the site with hydrological connections and proximity to Natura 2000 sites. The installation of the grid cable will have an imperceptible to neutral impact.
 Birds (habitat loss): Potential impacts on the conservation objectives of the Mullaghanish to Musheramore Mts. SPA are considered in the NIS (see section 11). Loss of conifer plantation (incl. compensatory replanting off site) and improved agricultural grassland is expected to have a neutral impact on the target Annex I bird species. The loss of wet grassland/cutover bog/heath habitat associated with turbines T2, T3, T13 & T17 and associated access tracks is considered likely to have an imperceptible impact on hen harrier. The loss/fragmentation of sections of bog/heath/wet grassland (i.e. T2, T3, etc.) will have a slight negative impact on the highly mobile wintering population of golden plover. The loss of wet grassland/cutover bog/heath habitat (i.e. T2, T3 etc.) as well as the loss of conifer plantation and improved agricultural grassland associated with the remaining infrastructure is considered likely to have an imperceptible impact on peregrine falcon. The loss/fragmentation of sections of upland heath/bog/wet grassland habitat (i.e. turbines T2, T3 etc.) will have an imperceptible negative impact on the loss/fragmentation of sections of upland heath/bog/wet grassland habitat (i.e. turbines T2, T3 etc.) will have an imperceptible negative impact on the local population of merlin. The proposal is considered likely to have an imperceptible impact on red grouse in the absence of any infrastructure within known areas of habitat. No impacts as a result of indirect habitat loss due to changes in hydrology/geomorphological or peat slippage anticipated.
• Birds (disturbance): Potential disturbance impacts on hen harrier, peregrine falcon, merlin and red grouse are considered to be negligible. A temporary slight negative disturbance/displacement impact on the local population of golden plover is anticipated given the presence of suitable alternative habitat in the wider area. The grid connection route is expected to have a negligible disturbance impact on birds given the short duration, location of the works areas and absence of any important habitats along the route. Works at POIs along the TDR could potentially disturb and displace nesting birds and other species and such impacts would be minor, temporary and localised.
• Mammals excl. bats (habitat loss): Permanent loss of predominantly highly modified habitat such as conifer plantation and improved agricultural grassland is unlikely to impact negatively on the local non-volant mammal community and could have a positive impact by creating more commuting routes etc. Aquatic habitats mammals (e.g. otter) could potentially be subject to indirect negative impact through siltation, run-off, fuel spills etc.
• Mammals excl. bats (disturbance/displacement): Potential impacts on non- volant mammals are considered imperceptible neutral overall given widespread availability of similar habitat, lack of breeding sites of protected species close to turbine locations, low abundance, daylight working etc.
• Bats: Potential impacts are considered slight to moderate negative short- term at the local scale given the lack of direct impact on known bat roosts, the extent of habitat loss, lack of suitability of conifer for roosting, daylight working hours, turbine distance from watercourses etc.
• Other Protected Fauna: Potential disturbance/loss of other taxa (e.g. common frog), however temporary in duration and localised, with affected taxa able to move into similar habitats in the wider area. No impacts on the Annex II marsh fritillary habitat expected and potential impacts on other taxa are considered imperceptible neutral overall.
 Aquatic Environment (wind farm site – tree felling): Given the close proximity/potential hydrological connectivity of the River Laney, Nadanuller Beg Stream and Glen River and tributaries, as well as Donoure Middle Stream, potential impacts are assessed as significant negative, short-term and at the local (sub-catchment) scale. Potential impacts to aquatic QIs of

	the Blackwater River SAC are considered as likely significant negative, short-term and at the scale of the European site (via Nadanuller Beg Stream and Glen River pathways). Potential impacts on freshwater pearl mussels are considered as significant negative, permanent and in the SAC context.
	• Aquatic Environment (wind farm site – excavations): Potential impacts are considered significant negative, short-term and in the local context, notwithstanding the geographic separation/limited surface water pathways. For pearl mussel, potential impacts are considered significant negative, permanent in context of the Blackwater River SAC with potential impacts to other aquatic QI species considered significant negative, short-term.
	 Aquatic Environment (wind farm site – access track): Potential impacts are assessed as being significant negative, short-term and at the local scale given the proximity/potential hydrological connectivity to the River Laney (and tributaries) and Nadanuller Beg Stream and Glen River (located 540m and 170m down-gradient from access track construction, respectively). Potential impacts to Blackwater River SAC QIs are considered moderate negative, short-term and at the scale of the European site given separation and poor hydrological pathways for impacts to the Nadanuller Beg Stream (and tributaries) and Glen River. For pearl mussel, potential impacts are considered likely significant negative, permanent and in the SAC context.
	• Aquatic Environment (wind farm site – turbines, met mast etc.): Potential impacts are considered significant negative, short-term and in the local context. The nearest downstream record for freshwater pearl mussel in the River Blackwater is c. 14.7km from the turbine T20 hardstand, along the Glen River pathway. For pearl mussel, potential impacts resulting from site excavations are considered significant negative, permanent and in context of the European site. The Blackwater River SAC is located c. 5.9km downstream of this location. Potential impacts to other aquatic QI are considered significant negative, short-term and in the context of this SAC.
	• Aquatic Environment (wind farm site – site drainage): Potential impacts to are considered moderate negative, short-term in the local context given the likely small-scale of site drainage-related events due to geographic separation and limited surface water pathways to receiving watercourses. Potential impacts to Blackwater River SAC QI species and habitats are considered likely significant negative, short-term and in the context of the European site. For pearl mussel, potential impacts are considered likely significant negative, permanent and in the context of the European site.
	• Aquatic Environment (grid connection): Potential impacts from both trenching and HDD are assessed as being significant negative, short-term and at the local scale. There are no predicted potential impacts (significant or otherwise) to aquatic QI, including freshwater pearl mussel, of the Blackwater River SAC given the absence of crossings over watercourses with downstream hydrological connectivity.
	• Aquatic Environment (TDR): Potential impacts are considered slight negative, short-term and in the local context. Impacts to the downstream-connecting Blackwater River SAC as a result of works at TDR-POI-36 and/or 44 are considered as not significant, short-term and at the SAC scale.
Operation	 Designated Sites: Elements of concern for QI / SCI species identified in the NIS include potential for collision with turbine towers, blades (moving or stationary) and/or associated infrastructure; potential displacement of birds due to loss of suitable feeding and/or breeding/wintering habitat; and potential displacement of otters due to lie-up sites being disturbed. Indirect impacts include reduction in prey due to impacts from emissions to water. See section 11 for further commentary on European sites.

 Habitats and Flora: Potential impacts are considered imperceptible neutral overall as there will be no additional removal of habitat and any deterioration of adjoining peatland is likely to be slight-permanent and localised.
• Birds (disturbance/displacement): Potential disturbance/displacement impacts on hen harrier, peregrine falcon, merlin and red grouse are considered to be negligible at the proposed development site. No significant disturbance/displacement impacts on the local wintering/migrating golden plover population are considered likely. All other recorded species are not regarded as being particularly sensitive to disturbance/displacement and/or barrier to movement arising from wind farm development.
• Birds (collision): Potential collision risk for hen harrier, peregrine falcon, merlin and red grouse is stated as very low given the low overflying rate by most species with the exception of golden plover whose regular occurrence within the study area and the potential for large flocks of this species to fly within the proposed rotor swept area, there is some potential for turbine collision to occur. Potential collision impacts on the local golden plover populations is therefore considered to be negative but not significant given their mobility. The grid connection will not pose any collision risk.
• Mammals (excl. bats): Potential impacts on non-volant mammals are considered imperceptible neutral overall. No operational phase works proposed on the TDR and grid connection and these elements do not have any potential to impact upon non-volant mammals. Likely positive impacts on local biodiversity associated with the implementation of the BEMP.
• Bats (disturbance/displacement): Potential to result in disturbance to commuting and foraging bats but connectivity throughout the afforested areas may be enhanced through additional roadways and the additional woodland edge habitat (along site tracks) is considered likely to have a slight positive impact on ease at which bats commute and forage through the site.
• Bats (collision): The high-risk species that were recorded were Leisler's bat, common pipistrelle and soprano pipistrelle. Collision risk for Leisler's bat is considered to be 'Low' in autumn, 'Moderate to High' in spring and 'Moderate to Low' in Summer (Table 8A.27) although this may be influenced by conifer rotational cycles. Collision risk for common pipistrelles is considered to be 'Moderate' autumn, and 'Moderate to High' in spring and summer. Collision risk for soprano pipistrelles is considered to be 'Low' for all three seasons of bat activity (i.e. spring, summer and autumn). The low-risk species that were recorded were brown long-eared bat, Natterer's bat, whiskered bat, Daubenton's bat and lesser horseshoe bat. Whilst activity levels for these species varied, by virtue of their low potential vulnerability to wind energy developments, no significant collision-related risk is likely. No other significant impacts are likely to occur on bats during the operational phase.
• Other Protected Fauna: Unlikely to lead to any significant impacts on other taxa (e.g. marsh fritillary, amphibians and reptiles) that occur at or in the immediate vicinity of the site. Potential impacts are considered to be imperceptible neutral overall.
 Aquatic Environment (wind farm site): Negligible risk of sediment release to the watercourses due to 'grassing-over' of drainage swales and revegetation of other exposed surfaces, and the non-intrusive nature of site operations. Potential impacts on aquatic ecology are considered likely slight negative, short-term and in the local context from oil/fuel spills etc. However, the installation of a fish passable culvert (WF-HF8) will result in a likely slight positive, long-term impact in the local context. Given the downstream- connectivity from the wind farm site and associated infrastructure (grid connection, sub-stations, access tracks etc.), potential impacts to aquatic QI

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	species and habitats of the Blackwater River SAC are considered likely not significant negative, short-term and in context of the European site.
	• Aquatic Environment (BEMP): Preventing livestock entry to watercourses will have a positive long-term impact and the commitment to biodiversity-friendly farming practices through control of stocking densities, minimising the use of herbicides and pesticides will protect water quality. Such measures will result in a medium to long-term positive impact locally.
Decommissioning	• Decommissioning activities are assumed to be similar to construction activities, having similar risks and sensitive receptors associated with them. However, they are considerably less intrusive. No other potential impacts other than those associated with the construction and operational phases are likely to occur during decommissioning.
	• Potential decommissioning phase impacts on aquatic ecology are considered slight negative, short-term and in the local context. Potential impacts to aquatic QI species and habitats of the Blackwater River SAC are considered not significant negative, short-term and in context of the SAC.
Cumulative	• Designated Sites: Potential cumulative and in-combination impacts on designated European sites is discussed in the NIS (see section 11). It does not identify any risk of significant cumulative or in-combination impacts upon terrestrial species and habitats associated with the construction, operation or decommissioning of the development. This is reflected in the EIAR.
	• Habitats and Flora: BEMP measures are designed for biodiversity gain in the area. There is no significant potential for cumulative impacts on habitat and flora due to the constraints-led design approach and the avoidance of direct impacts on high-value habitats and flora.
	• Birds: Potential cumulative and in-combination impacts on hen harrier is discussed in the NIS (see section 11). It is possible that 20 no. turbines would contribute to an increased collision risk, or disruption of movement of wintering/migrating golden plover, however, any such cumulative impacts are considered to be negative but not significant given the presence of extensive upland bog/heath habitat outside the wind farm boundaries and the apparent habituation of this species to wind farm infrastructure.
	• Mammals and Other Taxa: No permitted or operational projects in the wider receiving environment were identified which were likely to act cumulatively or in combination with the proposed wind farm to impact upon the mammal and other taxa present in the area. No likelihood of cumulative impacts on mammals or other taxa (e.g. amphibians, Lepidoptera) has been identified in relation to the construction, operation or decommissioning of the proposal.
	• Aquatic Environment: No potential and not significant cumulative impacts identified for the various developments, existing and proposed, that are listed in section 8B.5.5 of the EIAR, including tree felling and wind farms etc. As previously noted, the solar farm at Knockglass is built and commissioned.

Table B1:	Summary	of Potential	Effects
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Mitigation

Construction Phase

10.7.74. In terms of designated sites, mitigation is addressed in the NIS (see section 11). Chapter 8A of the EIAR also notes the relevance of the mitigation measures included in chapters 9 and 10 in relation to soil and peat stability, and hydrology respectively. 10.7.75. The measures in relation to aquatic ecology (Chapter 8B) are summarised below.

10.7.76. In terms of habitats and botanical species, the mitigation include:

- No removal/clearance of habitats or movement of construction machinery outside of the works area/footprint, with works area/footprint clearly marked for site staff.
- The installation of tree protection barriers around the root protection zones of retained trees. Where essential works are required within these zones, ground protection (e.g. cellweb membrane) will be installed following consultation with a qualified arborist and/or engineer, to minimise risks of damage to roots.
- Existing hedgerows and trees being retained at/near the site will be protected and retained in line with current guidelines and the advice of a qualified arborist.
- Implementation of the CEMP to ensure environmental protection in accordance with best practice (e.g. CIRIA 2015 & 2001). This will also address potential indirect impacts on habitats/species such as those associated with dust emissions.
- 10.7.77. Specifically in terms of invasive species, the EIAR notes the Invasive Species Management Plan (Appendix 8A.8) and specific measures, including the fencing off of infested areas prior to and during construction, avoiding the use of tracked machinery in infested areas, and the controlling the storage/movement of contaminated soil etc.

10.7.78. In terms of birds, the mitigation measures include:

- Daylight operations to minimise disturbances to roosting birds or any crepuscular/nocturnal bird species.
- Toolbox Talk to incorporated into site induction with maintenance of a wildlife register with reporting and logging of any bird sightings of note encouraged.
- No lighting at night with the exception of aviation warning lights and low-level switchable safety lighting. Lighting systems will be designed to minimise nuisance through light spillage. Shielded, downward directed lighting will be used wherever possible and all non-essential lighting will be switched off during hours of darkness.
- Wastes (edible and putrescible) will be stored and disposed of appropriately. Similarly, all construction materials will be stored and directed to licensed facilities.
- Implementation of mitigation measures outlined in EIAR relating to geology, soils and peat stability (Chapter 9) and hydrology and water quality (Chapter 10) will

minimise and prevent the potential indirect impacts on aquatic and Annex I habitats and associated bird species e.g. silt fences to reduce the risk of sediment run-off.

- Tree-felling etc. will be undertaken outside of the bird breeding season (March 1st

 August 31st). Hedgerows and mature trees will be retained insofar as possible along the TDR and grid route. Works areas are to checked for protected species.
- An appropriately qualified and experienced Ecological/Environmental Clerk of Works (ECoW) will be appointed to monitor the day-to-day construction activity and implementation of the environmental and ecological mitigation measures.
- Standard Vantage Point Monitoring in accordance with the Survey Methods for Use in Assessing the Impacts of Onshore Wind farms on Bird Communities (SNH, 2014) will be carried out during the construction year. The survey shall cover the development footprint and all areas within 500m of the works.
- A total of 30 no. bird nest boxes will be erected during the year of construction with the selection of boxes and deployment locations decided by a qualified ecologist.

10.7.79. In terms of mammals, the mitigation measures include:

- A pre-construction mammal survey will be carried out before the commencement of vegetation clearance and will include an active and passive bat survey including along the TDR and grid connection where any stone walls etc. are to be removed.
- An ecologist will supervise/check areas where tree-felling and vegetation removal will occur prior to and during construction to ensure appropriate mitigation measures (e.g. NRA guidelines) are applied.
- Daylight operations will minimise disturbances to nocturnal mammal species. Mitigation measures outlined in EIAR relating to geology, soils and peat stability and hydrology and water quality will minimise and prevent the potential indirect impacts described on aquatic and Annex I habitats and associated bird species.
- Lighting systems will be designed to minimise nuisance through light spillage.
 Shielded, downward directed lighting will be used wherever possible and nonessential lighting will be switched off during hours of darkness.
- Wastes (edible and putrescible) will be stored and disposed of appropriately. Similarly, all construction materials will be stored according to the CEMP.

- Mammal sightings / fatalities to be logged on the wildlife register.
- Bat activity will be monitored between May and October. A passive detector will be deployed at several locations close to the works footprint for the duration of the construction period to monitor the pattern of bat activity in the area throughout the tree felling and construction period. The locations chosen for the deployment of the passive detector(s) will include a number of locations at or adjacent to turbine locations and a number of other locations remote from turbines. These locations will be used for pre-, during- and post-construction bat activity monitoring.
- A total of 30 no. bat boxes will be erected in the area with the type of boxes and the deployment locations selected by a suitably qualified ecologist.
- Visitor information signage will be erected and visitors will be made aware of the sensitivity of the habitats and species, and advised of appropriate behaviour etc.
- 10.7.80. In terms of other protected taxa, the mitigation measures include:
 - Areas where peat is to be stored temporarily, or permanently, will be checked in advance for the presence of frogs (and spawn). Protected species, if present, will be translocated, if possible (and under licence if applicable). The same measure will be applied for any drains or areas of standing water forded by machinery. These areas will be checked on an ongoing basis by the ECoW and any areas with breeding frogs, spawn or tadpoles will be mapped and fenced off temporarily.
 - An updated survey for adult marsh fritillary will be carried out (May/June) and ideally before construction commences. Locations with Devil's-bit scabious within the site and along the TDR and grid route will be checked in September/October for the presence of larval webs. Marsh fritillary is the only Irish insect listed under Annex II of the EU Habitats Directive. In the event that larval webs are recorded within the proposed works area, mitigation measures will follow best practice guidelines as outlined in the Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2008).
 - If other taxa such as other species of lizard etc. are recorded within/adjacent to the site, the TDR or grid route, these sightings will be logged on the wildlife register.
- 10.7.81. In terms of the aquatic environment, the EIAR states that construction methodology will follow the guidance in *Standards for Felling and Reforestation* (DAFM, 2019) and

the *Forestry Standards Manual* (DAFM, 2015) to ensure tree clearance reduces the potential for sediment and nutrient run-off. Other measures in relation to felling include:

- A machinery exclusion zone from watercourses/drainage channels.
- Check dams/silt fences within the on-site drainage channels and maintained.
- Brash mats to support vehicles on soft ground and to protect the soil compaction.
- Embargo on machine operations during and in 48-hour before / after heavy rainfall.
- Removal of branch lop-and-top and other debris (brash) from felling areas within 20m of drainage channels will reduce nutrient seepage immediately post-felling.
- Additional mitigation proposed for felling within the BEMP lands, including peat dams and clearance of naturally regenerating conifers etc.
- 10.7.82. Other measures highlighted in relation to the aquatic ecology, and with specific regard to on-site excavations, access track construction, turbine and met mast construction, site drainage, grid connection installation (trenching / HDD), and the TDR, include:
 - Avoidance of working during rainfall.
 - ≥50m set-back/buffer zones.
 - Interceptor drains, silt fences etc.
 - Soil management in accordance with the CEMP.
 - Use of excavated spoil to reinstate borrow pits.
 - No stockpiling areas on site.
 - Topsoil storage local to excavations and used for reinstatement and landscaping.
 - Use of clean uncrushable stone with a minimum of fines for all track widening, to reduce the risk of suspended solid releases to receiving watercourses.
 - Avoidance of instream works at watercourse crossing i.e., River Laney (WF-HF4).
 - Measures to reduce / prevent surface water run-off, suspended solids, hydrocarbons, wastewater, cement and nutrients escaping to receiving waters i.e., settlement ponds, silt traps, interceptor drains etc.
 - Siltation management will reduce the risk of water quality impacts to receiving watercourses, including at 6 no. riverine watercourse crossings.

- Crossing of surface water drains via precast box culverts. Forestry drains will be crossed using Ø 450mm pipes. Where cross drains are to be provided to convey the drainage across the track, the minimum sizes are Ø 300mm pipes.
- Silt Protection Controls (SPCs) are proposed at the location of the drain crossings.
- Cable ducts in the verge / carriageway of the public road and installed above proposed pre-cast concrete box culverts for site tracks.
- Excavated spoil from the cut trenches, where appropriate (i.e., when trenching within private tracks or the public road verge) will be used to back-fill the trenches. Any excess will be disposed of off-site, at an appropriate licenced facility.
- All excavated material emanating from trenches within the public road network will be disposed at an appropriate licenced facility. Mitigation measures to prevent the escapement of suspended solids to receiving watercourses (e.g. silt fences, interceptor drains, settlement ponds, drain blocking etc.).
- The River Laney (GCR-WCC7), Awboy River (GCR-WCC8), Carrigthomas Stream (GCR-WCC9) will be crossed via HDD. The drilling works will only be completed during a dry period between July and September (as required by IFI for such works) to avoid the salmonid spawning season and sensitive life stage period.
- A pre-construction otter survey to be undertaken in the vicinity of the 4 no. drilling locations to ensure than no breeding or resting areas are located within 150m of the drilling locations. Should an otter breeding (holt) or resting area (couch) be detected, a derogation licence will be obtained from the NPWS to facilitate works.
- Silt curtains and floating booms will also be used where deemed to be appropriate, in consultation with IFI. An ECoW will monitor both turbidity and observe the riverbed during the drilling process to detect any leakage (frac-out) of drilling fluid and works will cease immediately should a leakage be observed.
- To reduce the requirement for instream works, the existing bridge (WF-HF8) will be replaced with a 6m-single span bridge with fish-passable culvert. Cable ducts associated with the internal collector circuit will be built into the bridge deck, which will be pre-fabricated off site. Undertake instream works between July-September as per IFI guidance, de-water site and translocate fish via electro-fishing etc.

10.7.83. Chapter 8B of the EIAR also notes that mitigation measures relating to aquatic ecology should follow those outlined in Chapter 10 of the EIAR for hydrology and water quality.

Operational Phase

- 10.7.84. In terms of designated sites, mitigation is addressed in the NIS (see section 11). Again, Chapter 8A of the EIAR also notes the relevance of the measures included in chapters 9 and 10 in relation to soil and peat stability, and hydrology respectively.
- 10.7.85. The measures in relation to aquatic ecology (Chapter 8B) are summarised below.
- 10.7.86. In terms of habitats and botanical species, the mitigation measures include the full implementation of operational phase monitoring, including:
 - Pollution prevention (e.g. fuels, turbine fluids, and silty water) through the use of silt fences, cut-off drains, silt traps, check dams and drainage to vegetated areas where maintenance of site infrastructure or the drainage network is required.
 - Reporting of failing water treatment measures and following-up pollution incidents with appropriate remedial measures in consultation with Inland Fisheries Ireland and other relevant agencies where needed e.g. NPWS, the local authorities.
 - Visitor information signage near the amenity car park describing the diversity of species and habitats in this area and making visitors aware of the sensitivity of the habitats and species and advising of appropriate behaviour.
- 10.7.87. In terms of birds, the mitigation measures include:
 - Bird activity will be monitored during construction and for 3 years post construction. Upland breeding bird surveys will be carried out and winter VP surveys will be undertaken with reference to standard methodology. Annual reports will be prepared and submitted for the attention of NPWS and the planning authority.
 - Warning lights will be installed on turbines to increase their visibility, and thereby reduce the risk of bird collision. A number of the turbines will be fitted with aviation warning lights as per IAA requirements in advance of project construction.
 - A fatality monitoring programme will be instigated for the first 3 years of operation.
 A portion of the fatality searches will be carried out using specially trained cadaver dogs and their handlers. This will involve monthly searches around each turbine base during the winter period (October-March) and three further breeding season

(April-August) carcass searches. An annual fatality search report will be submitted for the attention of NPWS and the planning authority. Any fatalities noted by site staff or maintenance crews will be logged on the wildlife register and this register will be made available to the ecologist carrying out the monitoring program.

- Bird boxes will be checked and maintained annually for the first 3 years of operation, and every other year for the lifetime of the wind farm.
- Visitor information signage etc. as per construction phase.

10.7.88. In terms of mammals, the mitigation measures include:

- Lighting systems etc. as per construction phase.
- Storage and disposal of edible/putrescible wastes etc. as per construction phase.
- Mammal sightings / fatalities to be logged etc. as per construction phase.
- In addition to the creation of buffers between the turbines and surrounding vegetation, reduced rotation speed will be implemented when turbines are idling.
- Bat boxes will be inspected by a qualified ecologist for the first 3 years of operations and inspected every other year for the lifetime of the wind farm. Any boxes requiring maintenance/replacement will be identified and replaced under supervision.
- Monitoring of bats for at least 3 years once the wind farm is operational. Surveys will be conducted from March/April to October/November inclusive. Monitoring will include detector surveys of bat activity near all turbines and the continuing status of any nearby potential roosts. Passive detector(s) will be deployed at several locations, a number of these close to turbines and others remote from turbine locations, within the wind farm site during the summer/autumn months. These deployment locations will be the same used in the pre-and during-construction bat monitoring. An annual report of operational phase bat activity will be prepared and submitted for the attention of NPWS and the planning authority.
- Visitor information signage etc. as per construction phase.

10.7.89. In terms of other protected taxa, the mitigation measures include:

• Monitoring sightings of rare or protected invertebrates, amphibians etc. will be recorded and if appropriate this information will be submitted to the NBDC.

- Sightings of other taxa to be logged as per construction phase.
- Visitor information signage etc. as above.

10.7.90. In terms of aquatic ecology, the mitigation measures include:

- Interceptor drains and check dams installed with the swales to reduce the risk from the estimated increase in peak run-off (0.16%) due to new hardstanding areas.
- Natural 'grassing-over' of drainage swales and revegetation of other exposed surfaces, and the non-intrusive nature of site operations, will further reduce the risk of sediment release to the watercourses.

Decommissioning Phase

- 10.7.91. The EIAR notes that the impacts during decommissioning are similar in nature, if not in scope, to those during construction. Measures therefore include:
 - The control run-off or potential pollution to watercourses, lighting design and proper treatment of edible/putrescible wastes as per the construction phase.
 - Re-use of plant at other wind farm sites whenever possible. Materials which cannot be re-used will be recycled i.e. scrap metal, plastic and other waste materials.
 - Disposal of materials which cannot be re-used or recycled by an appropriately licenced contractor in the most environmentally appropriate manner available.
 - Regular monitoring following reinstatement, to determine the progress of revegetation and introduce supplementary planting with native species, if necessary. Site reassessment will be carried out at the end of Year 1 to assess progression over the previous year and to take photographic evidence of the vegetation status, drainage management and general site appearance.
- 10.7.92. Similarly in relation to aquatic ecology, the EIAR notes that the mitigation measures applied during decommissioning activities will be similar to those applied during construction but will be of reduced magnitude. Specific measures include:
 - Use of construction phase access tracks.
 - Covering over of turbine foundations and hardstand areas with local soil/topsoil to revegetate and thus causing less environmental damage than removing them.

- The grid connection ducting and substation will be left in situ as part of the national grid, therefore no potential impacts are likely and thus no mitigation is required.
- The temporary accommodation works along the TDR will not be required as turbine components can be dismantled on site and removed using standard HGVs. No decommissioning activities are envisaged for the BEMP lands.

<u>BEMP</u>

- 10.7.93. Section 8A.8 of the EIAR outlines the main objectives and measures of the BEMP. As noted in section 3.3, the BEMP is not designed to mitigate or address potential construction, operation or decommissioning impacts. It is instead a commitment to yield a lasting biodiversity benefit to the area. Common management measures are:
 - Removal of all self-sown conifer saplings.
 - Removal of all invasive non-native species, notably Rhododendron.
 - Control of Bracken.
- 10.7.94. The BEMP extends to 6 no. land parcels; 4 no. private landowners and Coillte. I note that Coillte will fell c. 18ha of commercial plantation, under licence, to create wildlife corridors between areas of open heathland and bog. The EIAR states that the use of these corridors by bats, birds and non-volant mammals will be monitored. The measures agreed to by the private landowners include those designed to protect watercourses, prevent overgrazing and to clear invasive and site inappropriate plants.
- 10.7.95. Higher value habitats will be actively managed to maintain and improve their value and lower value habitats will see specific interventions designed to improve their attractiveness for a wide range of species. The plan when implemented will see:
 - >15km of new hedgerow and several hectares of native woodland established.
 - c. 20ha of wild bird cover established.
 - Stocking density limited and dropped in sensitive habitats under grazing pressure.
 - A large number of bird (including Barn Owl boxes) and bat boxes erected, maintained and monitored.

10.7.96. The EIAR states that the BEMP programme will run for the lifetime of the wind farm and many of the proposed features, such as tree and hedgerow planting, will have a longer-lasting biodiversity benefit to the lands included in this plan.

Residual Impacts

- 10.7.97. The residual impacts on terrestrial ecology are detailed in section 8A.9 of the EIAR. It states that the monitoring and mitigation commitments will be effective in ensuring that the residual impacts will likely be slight negative (local) in the temporary to short-term upon the terrestrial habitats and species that occur in the receiving environment.
- 10.7.98. With the implementation of the BEMP there will be a predictable local gain for biodiversity in the area. The commitments provided are designed to yield a number of positive outcomes for species and habitats in the area, throughout the lifetime of the wind farm and into the future. The residual terrestrial biodiversity impacts are therefore considered to be likely significant and positive at the local level in the long-term.
- 10.7.99. The residual impacts on aquatic ecology are detailed in section 8B.7 of the EIAR. I note that the proposed project would have a significant negative, short-term impact on sensitive aquatic receptors in the local scale context during the construction phase, in the absence of mitigation. Potential impacts to aquatic QI species and habitats of the Blackwater River SAC are considered moderate negative to significant negative, short-term and in context of this European site, in the absence of mitigation measures.
- 10.7.100. The grid connection is not predicted to have any impacts, even pre-mitigation, on the QI of the Blackwater River SAC given the lack of hydrological connectivity. For freshwater pearl mussel in the Blackwater River SAC, other potential impacts would be elevated to significant negative, permanent and at the scale of the European site, in the absence of mitigation. However, through the implementation of the mitigation measures, including those relating to water quality and hydrology (Chapter 10), residual impacts to water-dependent species and habitats are considered to be non-significant, short-term and in the local context (i.e. sub-catchment scale). Residual impacts to the aquatic QI (incl. freshwater pearl mussel) of the Blackwater River SAC are considered to be not significant negative, short-term and in the context of the SAC.

Assessment of Direct and Indirect Significant Effects

Habitat Loss

- 10.7.101. As noted, the dominant habitats present within the proposed works footprint are largely modified habitats, including mature, semi-mature and young 1st and 2nd rotation commercial conifer plantation (WD4), improved agricultural grassland (GA1), semi-natural to semi-improved wet grassland (GS4) and buildings and artificial surfaces (BL3) (tracks, local roads etc.). Whilst there has been some change to land cover since the habitat and flora surveys (August 2018 to November 2020) and the dates of my site inspection, I am satisfied that the EIAR accurately reflects the dominant habitats but it should be noted that turbine T14 is sited within pre-thicket forestry which remains an important habitat for hen harrier nesting and foraging, albeit a temporary one.
- 10.7.102. Whilst the EIAR states that 16 of the 20 no. proposed turbines will be located on conifer plantation (WD4) and improved agricultural grassland (GA1), the local authority has raised specific concerns in relation to the other 4 no. turbines, namely:
 - T2 located in wet/acidic grassland (GS3/GS4),
 - T3 located in degraded dry heath (HH3), and
 - T13 and T17 located in cutover bog/wet heath (HH3/PB4) mosaic.
- 10.7.103. In terms of turbines T2 and T17, the EIAR determined that the initial habitat surveys provided enough information and did not consider dedicated quadrat surveys were required. Regarding turbines T3 and T13, it states that the possibility of higher conservation value habitat could not be ruled out and thus required quadrat surveys.
- 10.7.104. In relation to turbine T3, the EIAR states that a total of four quadrats were completed and quadrat R2 was deemed to be the most suitable location for the turbine. I have no geographic representation of the quadrat sampling areas before me, which would have been useful. The EIAR suggests that quadrat R2 is heavily altered, degraded heath habitat, where very rank Purple Moor-grass and establishing Willow are likely to persist. Therefore, according to the EIAR, it is not considered to be in Annex I habitat.
- 10.7.105. I inspected the locus of turbine T3 and do not dispute these findings. I do, however, share the local authority's concerns, where, according to the EIAR, some pockets of

Annex I wet heath (4010) 'may persist'. Whilst the further information response²⁵ attempts to address these concerns, I'm unconvinced that the proposed turbine has been optimally sited to avoid any potential effects on higher value upland habitat. In my opinion, a marginal re-siting to the east and within forestry is a possible solution.

- 10.7.106. Regarding turbine T13, the EIAR states that a total of five quadrats were completed. Again, I have no information regarding the quadrat sampling areas. The EIAR states that turbine T13, is within quadrat areas "R1,2 and R3" which is assigned to heathland, "albeit weakly in the case of R2". It notes whilst such marginal habitats may conform to Annex I habitat such as wet heath (4030), in the context of historic degradation as a result of peat extraction and current grazing levels, a rank Purple Moor-grass – Ling Heather community is likely to persist and therefore is not considered Annex I habitat.
- 10.7.107. I inspected the locus of T13 and signs of historical peat extraction and ongoing sheep grazing were evident, however I considered that the inferred level of degradation of wet heath and cutover bog is overstated. Whilst the further information response attempts to address the local authority's concerns in this regard, I'm unconvinced that T13 has been optimally sited to avoid any potential effects on higher value habitat.
- 10.7.108. I also note that the ground conditions near T3 and T13 were extremely wet underfoot and whilst this primarily relates to peat stability, and is addressed elsewhere in this report, it overlaps in terms of potential significant impacts on habitats and biodiversity.
- 10.7.109. In relation to turbines T2 and T17, the further information response reiterates the comments provided in the EIAR, stating that the peat habitats at both locations were found to be of degraded/poor status in general and it was considered that the surveys undertaken provided enough information to conclude that the proposed development would have minimal impact on key upland habitats identified overall, including peat.
- 10.7.110. I inspected the locus of turbine T2 and I agree that Plate 1 of Appendix 6 of the further information response generally reflects the habitat types in the vicinity of the proposed turbine. I note that sheep were grazing in the area, albeit primarily on identified Dry-humid acid grassland (GS3), which was bound in parts by old wallsteads, suggesting previous human intervention in the vicinity of the proposed turbine. The area beyond the wallsteads to the west is certainly lower value habitat (GS4), however to the south and east, identified as wet heath (HH3), is possibly of higher value and would, in my

²⁵ See for example Plate 2 of Appendix 6 of Further Information Response Report.

opinion, have warranted further micro-siting considerations. Failure to identify the stone walls (BL1) in this area represents a general gap in the survey information.

- 10.7.111. The location of T17 is sub-optimal in my opinion. Whilst I was unable to examine the locus given the density of vegetation underfoot, my observations would support the proposition that Northern Atlantic wet heaths with *Erica tetralix* (4010) are present in this area. I also note that the ground conditions near the locus of T17 were extremely wet underfoot and this is a cause of concern given the proximity of Annex I habitat²⁶.
- 10.7.112. In this regard, and as per the NIS, I note that the Scottish Environmental Protection Agency state that the zone of influence for Ground Water Dependent Terrestrial Ecosystems (GWDTE) from excavations deeper than 1m is a 250m buffer around the works area. Turbine foundations will be circular in shape and will be 25m in diameter and 4m deep²⁷. The peat depth range is given as 0.6-0.7m. Any resultant dewatering within this buffer area, which could adversely affect this Annex I habitat, is unclear.
- 10.7.113. Moreover, the quantum of excavation required to achieve a level, or close to level, turbine hardstanding area and reasonably graded access track²⁸ to facilitate turbine construction and maintenance is unclear. This is of particular concern in the vicinity of turbines T3, T13 and T17 where the slopes are 12°, 14° and 12° respectively. In this regard, I note that the main crane pad hardstanding area will be 40m by 70m, however the grading required within these sloped areas will significantly impact on more habitat.
- 10.7.114. I also have concerns regarding peat stability as addressed elsewhere in this report.
- 10.7.115. Whilst the observers also note the presence of Devil's-bit scabious plant, the concerns here are in the context of habitat for the marsh fritillary butterfly, as discussed below.

Hen Harrier

10.7.116. The EIAR states that the loss of wet grassland/cutover bog/heath habitat associated with turbines T2, T3, T13 and T17 and associated access tracks is considered likely to have an imperceptible impact on hen harrier. Whilst it does acknowledge that hen harrier are the sole SCI species of the adjacent Mullaghanish to Musheramore Mountains SPA, and were present during each breeding season survey, it states that their activity levels accounted for less than 1.5% of the survey time, and primarily

²⁶ See Plate 1 of Appendix 6 of Further Information Response Report.

²⁷ Foundation depths are stated as 3m in the EIAR.

²⁸ Contours along the access track to turbine T17 (outside forest canopy) fall from c. 410mAOD to 380mAOD

related to foraging and commuting at heights of less than 30m. I don't dispute these findings and for this reason, and having regard to the applicant's further information response, I have no concerns regarding significant collision-risk impacts arising during the operational phase. I do, however, harbour concerns regarding habitat loss. As noted, the observers raised concerns regarding impacts on hen harrier and other birds.

- 10.7.117. Appendix 6 of the applicant's further information response addresses such concerns as initially raised by the local authority. Whilst they do not contest the fact that hen harrier occurs within the wind farm site, they reiterate that the 'intensive survey effort' demonstrates that it does not appear to be an important foraging area, or a regular commuting route for hen harrier. Again, I do not dispute the thrust of the scientific evidence presented with regards foraging observations and distances, prey and habitat changes, but this is very much orientated towards known nesting sites and populations and does not consider the potential for future nesting sites towards the eastern extent of the SPA near the slopes of Musheramore and Seefin ridge. This is particularly pertinent in the context of the *Hen Harrier Threat Response Plan 2024-28*.
- 10.7.118. In this regard, I reject the suggestion that 'T13 and T17 are in an area of intensive sheep grazing and do not present as attractive foraging habitat'. The intensity of grazing observed in this area is low, at best, with the approach to the locus of turbine T17 impassable during my site inspection. Whilst I broadly agree that the level of habitat loss at turbines T2, T3, T13 and T17 is minor in the context of the overall Boggeragh Mountains, and unlikely to adversely impact on the conservation objectives of the adjacent SPA in terms of *ex situ* habitat, its significance of impact is underestimated in the EIAR, having regard to unquantified level of loss/degradation due to turbine foundations, hardstanding and access tracks as discussed above.
- 10.7.119. Given its significant decline in recent years, the level of significance of impact on hen harrier must be considered in the local context e.g., + / an additional breeding pair²⁹.
- 10.7.120. I do however understand the applicant's suggestion that by affording additional protection to such areas is akin to including them within the designation of a Natura site. That would be reasonable were it not for the immediate proximity in this case.

²⁹ See section 6.4.11 above.

Golden Plover

- 10.7.121. The EIAR states that the loss/fragmentation of sections of bog/heath/wet grassland (i.e., T2, T3, T13 and T17) will have a slight negative impact on the highly mobile wintering population of golden plover. In this regard, it acknowledges that this Annex I species is associated with the Boggeragh Mountains NHA and were present during each breeding season survey (except for summer 2017) and were the most commonly recorded species during the winter study where flock size ranged from 1-500 birds. I don't dispute these findings and for this reason, and having regard to the applicant's further information response, I have no concerns regarding significant habitat loss during the construction phase, including 'staging habitat' as raised by the Council.
- 10.7.122. In this regard, I note the distinction between this stable wintering population and the declining breeding population which is restricted in range to the northwest of Ireland.
- 10.7.123. In terms of collision risk, having regard to the applicant's further information response, I accept that golden plover is highly mobile and adept at avoiding collision with turbines, making them less susceptible to turbine collision. The applicant states that this supposition is supported by post-construction monitoring at 15 upland windfarms where no significant decline in golden plover numbers occurred (Pearce-Higgins *et al.*, 2012) and also during 3-years of post-construction surveys at one UK windfarm site (Douglas *et al.*, 2011) where no decline in golden plover populations was recorded.
- 10.7.124. Whilst the applicant acknowledges that 63.5% of the surveyed golden plover flightlines were estimated as occurring at potential rotor-swept heights, only 15% (27 no.) crossed areas close to the locus of the turbines, with c. 10 flightlines outside of the rotor swept height. Therefore, the actual number of flights observed closely intersecting the turbine locations at rotor swept height was less than 20. In these circumstances, and having regard to the above studies, I agree with the EIAR findings that potential collision impacts on the local populations is negative but not significant.

Other Birds

10.7.125. Impacts of the proposal on skylarks and the white-tailed eagle were raised by the observers in addition to migratory birds such as wild geese. At scoping stage, the DHLGH-DAU highlighted the barn owl and the curlew as a species of conservation importance that could potentially be affected by the proposed development, in addition to other protected species that could occur including merlin and peregrine falcon.
Similar concerns were raised by the Council, noting the kestrel as species of concern. These concerns generally relate to general disturbance/displacement and collision.

- 10.7.126. In terms of skylark, the further information response notes that this species in addition to meadow pipit make up a significant part of the diet of hen harriers and suggests that the clearance of ecological corridors through areas of mature plantation will serve to increase the areas available for such 'open habitat' specialists. Whilst this may have a positive impact on local populations, it is indirect, and potentially of greater effect on hen harrier. I do not consider the proposal represents a direct significant impact on skylark given their relative abundance during the breeding season (see Table 8A.9).
- 10.7.127. Regarding white-tailed eagle, the further information response notes that this and other large raptors recorded at the site, including red kite and marsh harrier, do not typically occur in the area, are highly mobile and recorded widely across Ireland. In such circumstances, I do not consider any significant direct/indirect impacts will occur.
- 10.7.128. In relation to merlin and peregrine falcon, the further information response notes that whilst there were a number of sightings, neither species was recorded breeding within or adjacent to the study area or regularly present in either summer or winter periods. Whilst I consider that both species are likely to occur in this area where suitable habitat is present, I agree that negative impacts will be imperceptible on local populations.
- 10.7.129. Similarly, in terms of kestrel, the species is present but not particularly common within the study area, and whilst it may be more vulnerable than other raptors to collision risks, I agree that it is unlikely that the proposal will impact on population demography.
- 10.7.130. In relation to barn owl, the EIAR notes that there are no known sites within the study area, with the closest, an active nest site, over 2km away. I also note that the curlew, a red-listed species of high conservation concern in Ireland has been recorded historically within the 10km grid (NBDC ref. W38) overlapping the study area. However, as neither species has been recorded on site, I have no significant concerns.
- 10.7.131. Finally, in terms of migratory birds, I accept that wind farms can cause displacement by creating a barrier effect, which could result in disruption of ecological links between feeding, breeding and roosting areas. The EIAR notes that this problem is more likely to occur with migrating wildfowl populations, however, and no such species were recorded at the study area. In the absence of any technical evidence to demonstrate

otherwise, including the flightpaths of wild geese, and with relatively little overflying and not in significant numbers at turbine height, I consider no significant impacts arise.

Bats

- 10.7.132. The observers raised concerns regarding the impact of the proposal on bats generally. The local authority raised more specific concerns in relation to the core sustenance zone (CSZ) of the species identified within the study area and the potential impact of habitat loss, reduction in prey, collision risk and potential for colony collapse. At scoping stage, the DHLGH-DAU highlighted Leisler's bat as a species of conservation importance that could potentially be affected by the proposed wind farm development.
- 10.7.133. The applicant's further information response notes that a moderate to high level of bat activity was recorded at the site, and a high level of species diversity but is not atypical of other similar habitats in Ireland. It specifically notes that the site generally lacks suitable structures or natural bat roosting features and primarily a foraging habitat.
- 10.7.134. In terms of the CSZ, it notes that common and soprano pipistrelles were observed emerging from a structure located c. 930m north-east of proposed turbine T10 and this was initially stated as c. 700m in the EIAR. Having regard to the 'total footprint of habitat loss', which it states is c. 1.5% of total habitat available to pipistrelle bats within the 3km CSZ, it considers any measurable impact to be highly unlikely and certainly not of a scale that would cause colony collapse. I consider this statement reasonable.
- 10.7.135. Regarding collision risk, the further information response states that the assessment presented in the EIAR represents industry best practice and notes this assessment concluded that collision risk is 'Low' to 'Moderate to High' for relevant high-risk species (common pipistrelle, soprano pipistrelle and Leisler's bat). This is deemed reasonable.
- 10.7.136. In terms of mitigation, the 'feathering' of idling blades is a standard method of reducing the potential effect of collision and overall, I agree with the EIAR findings that no significant impacts are likely to occur on high-risk species including Leisler's bat.

Mammals (excl. Bats), Molluscs and Insects

10.7.137. The observers raised concerns regarding the impact of the proposal on a number of other mammal species including squirrel, badger, stoat, hare, foxes and frog. The local authority raised specific concerns regarding the impact on badger social groups.

- 10.7.138. Regarding badger, the further information response states that the potential for habitat loss of ecological value for badgers (<4%) is significantly below the >25% threshold where the effect may be considered as significant. I also note the crepuscular nature of these species will limit the impact of day-time construction and amenity trail usage. I therefore agree that the significance of effect is imperceptible neutral overall and this equally applies to other non-volant mammals recorded within the wind farm study area.
- 10.7.139. The observers also raised concerns regarding the impact of the proposal on the Kerry slug and marsh fritillary. The DHLGH-DAU highlighted similar scoping stage issues.
- 10.7.140. The results of 'other protected fauna' surveys are noted in sections 10.7.62 to 10.7.64 above, and whilst marsh fritillary larval webs were confirmed on site, there were no observations of the Kerry slug. In this regard, I accept that marsh fritillary butterfly is likely to persist at the site having regard to the proposed mitigation measures which include the locus of Devil's-bit scabious being checked in September/October for the presence of larval webs. I thus consider potential impacts imperceptible neutral in accordance with the EIAR and in the absence of any information to indicate otherwise.

Aquatic Ecology

- 10.7.141. Finally, in relation to biodiversity, the observers raise concerns regarding the impact of the proposal on freshwater pearl mussel through sedimentation of connecting watercourses. Similar issues were raised by the DHLGH-DAU at scoping stage in addition to potential impacts on other aquatic ecology i.e., salmon, lamprey and otter.
- 10.7.142. As noted, in the absence of mitigation measures, the proposed development would have a significant negative, short-term impact on sensitive aquatic receptors in the local scale context and moderate negative to significant negative, short-term impacts to aquatic QI species and habitats in the context of the Blackwater River SAC during the construction phase. However, having regard to the mitigation measures outlined in section 10.8, including the CEMP, I am satisfied that water quality will be unaffected by the proposed works and I note the monitoring programme proposed in this regard.
- 10.7.143. I recommend that the applicant be required to incorporate this monitoring programme, including weekly sampling, into the CEMP, if the Board are set to grant permission.

Overall Conclusion on Biodiversity

- 10.7.144. I have considered all of the written submissions made in relation to biodiversity and the relevant contents of the file including the EIAR. I am not satisfied that the potential for significant adverse impacts on biodiversity can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions without the omission of turbines T2, T3, T13 and T17 as the effects are considered too significant on higher value heathland, and the impact that this effect could have on local birds of prey, including hen harrier.
- 10.7.145. There would appear to be some scope to address these concerns in relation to turbine T2 through further micro-siting, even if it strays further into a 'Normally Discouraged' area as discussed in section 9.2 above, and as provided for under Objective ET 13-8.
- 10.7.146. Similar re-siting could apply to turbine T3, although I do not recommend it in this instance. Having regard to the information before me and having visited the locus of turbines T3, T13 and the area of turbine T17, I do not consider that significant impacts on biodiversity can be avoided, managed or mitigated to an acceptable tolerance.
- 10.7.147. I am not therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on biodiversity. I recommend that the Board consider the omission of turbines T2, T3, T13 and T17 in the event of a grant of permission or alternatively the omission of turbines T3, T13 and T17 and further micro-siting (or omission) of T2 in accordance with section 7.3 of the WEDG.
- 10.7.148. I consider the omission of turbines T2, T3, T13 and T17 to be the preferable approach.

10.8. Land, Soil, Water, Air and Climate

10.8.1. This section relates to chapters 6 (Air and Climate), 7 (Noise and Vibration), 9 (Land, Soil, Hydrogeology and Geology) and 10 (Hydrology and Water Quality) of the EIAR.

Air Quality and Climate

Issues Raised

- 10.8.2. The observers have not raised any direct concerns in relation to air quality and climate.
- 10.8.3. I note DHLGH-DAU comments during the scoping stage in relation to the impacts of peat extraction and CO₂ emissions, albeit in the context of biodiversity. In this regard, they stated that the emissions during construction phase and over the lifetime of the wind farm needs to be taken into account in the assessment of cumulative effects.
- 10.8.4. The local authority's Environment Section had no substantive objection but sought clarification regarding background dust monitoring which they consider could be used as a baseline for future monitoring in order to evaluate the mitigation measures.

Examination, Analysis and Evaluation

- 10.8.5. Chapter 6 of the EIAR assess the likely air quality and climate impacts associated with the proposed development. There is some overlap with Chapter 11 in terms of human health, as noted in Table PHH1 above. This chapter is supported by:
 - Appendix 6.1 (Carbon Calculator Inputs),
 - Tables 6-1 to 6-12, and
 - the further information response (Section 3.4.1.2).
- 10.8.6. Air quality sampling was not undertaken, on the basis that the receiving environment is expected to have good air quality due to the lack of major air pollution sources in the areas, such as heavy industry etc. I consider this to be a reasonable assumption.
- 10.8.7. The EIAR focuses on the potential emissions to air during the construction and decommissioning phases, since there will be no direct emissions during the operational phase, aside from infrequently used back-up generators. Moreover, given that the project relates to renewable energy, it is noted that it would contribute to a reduction in dependency on fossil fuels with a resultant reduction in harmful emissions.

- 10.8.8. Assessment methodology includes review of existing Environmental Protection Agency (EPA) air quality monitoring data and review and assessment of the construction methods for the proposed wind farm and associated infrastructure to identify the potential for air emissions during construction and decommissioning.
- 10.8.9. To assess the impacts of construction dust emissions, the NRA's Assessment Criteria for the Impact of Dust Emissions from Construction Activities (with standard mitigation in place) was used (Table 6.3). Table 6.4 details the definitions of impact magnitude for changes in ambient pollutant concentrations and Table 6.5 details the descriptors for changes in annual mean nitrogen dioxide, PM10 and PM2.5 at receptors.
- 10.8.10. In terms of climate, monthly meteorological data from Met Éireann was reviewed to gain an understand of the existing climatic condition. The Scottish National Heritage carbon calculator, which accounts for all stages of the project, was used to determine the long-term effect of the project on climate. Its use is reasonable given the similarities i.e. high ground peatlands with forestry and similar climate. The impact assessment also involved a review of methodology for construction, operational and decommissioning phases to determine impacts on both the micro and macro climates.
- 10.8.11. With specific regard to the carbon calculation, I note that the following presumption for the 20-turbine wind farm were made: the lifetime is 35 years and the MEC is between 118 - 132MW, the capacity factor is 35% and the fraction of output to back up of is between 5.9MW and 6.6MWMW (i.e. 5% of capacity). These are deemed reasonable.
- 10.8.12. A summary of the main CO₂ losses due to the proposed wind farm project are summarised in Table 6.12 however I note that they do not take account of the 88ha of forestry to be replanted and are therefore slightly higher than the actual carbon loss.

Baseline

- 10.8.13. The application site is located in a rural area c. 34km northwest of Cork City. The nearest settlements are Ballinagree village (c. 1.5km south), Millstreet (c. 10km northwest) and Macroom (c. 10km south). Land uses in the area generally comprise commercial forestry, areas of peat bog and agricultural lands with scattered settlement patterns, made up of one-off rural housing and farmyards along the road network.
- 10.8.14. Section 6.3 of the EIAR sets out the receiving environment in terms of air quality (sulphur dioxide SO₂, particulate matter PM₁₀, nitrogen dioxide NO₂, carbon monoxide CO, and dust) and climate. It relies on data from Blackpool (Cork City), the closest

EPA monitoring station, and the data is from 2000 and therefore should be treated with caution. Table 6-6 indicates that there were no threshold exceedances for SO₂. Table 6-7 notes significant exceedances for PM_{10} (75.2% for the upper threshold). Table 6-8 indicates a marginal exceedance of 0.8μ g/cu.m for NO₂ average hourly value but the hourly limit values for the protection of human health were not exceeded.

- 10.8.15. There are no statutory dust deposition limits, however TA Luft, the German Technical Instructions on Air Quality, provide a guideline value of maximum 350mg/sq.m/day.
- 10.8.16. Meteorological data obtained from Cork Airport, the nearest weather station, details the climatic conditions of the wider area. The data is from January 2018 July 2021.
- 10.8.17. In terms of the sensitivity of the receiving environment, the EIAR notes that there are 136 no. residential receptors within 2km of the wind farm site, 60 no. within 1.55km (or 10 rotor diameters) of the proposed turbines, with 10 no. located within 1km of the proposed turbines. The closest residential receptor is 809m from the nearest turbine³⁰.

Potential Effects

10.8.18. Potential effects, as identified in the EIAR, are summarised in Table AQ1 below.

Project Phase	Potential Effects
Do Nothing	Local air quality and the microclimate will remain unchanged.
	• Increase in GHG emissions on a national scale if increasing future electricity needs are not met by alternative renewable sources which has the potential to contribute to air pollution and climate change.
Construction	 Air Quality: Construction vehicles and plant emissions have the potential to increase concentrations of compounds such as NO₂ and PM10 in the receiving environment. Due to distance between the nearest receptor and source of emissions the impact from these emissions will be imperceptible. Due to the nature of construction works along the grid connection, a "rolling" construction site, these works will not be concentrated in any one area of the route and effects in relation to dust and air pollutants are considered to be short term, temporary and slight. It is not predicted that an air quality impact will occur due to traffic as the impacts will fall below the screening criteria (DMRB, UK). Some receptors have the potential for dust soiling due to trucks travelling along local routes. This is a temporary, moderate impact. Plant and machinery such as generators, excavators etc. will be required. These will be relatively small units operated on an intermittent basis. There will be an emission from these units but given their scale and length of operation time, impacts of emissions from these units will be imperceptible.
Operation	• Air Quality: A diesel generator will be located at the wind farm substation but will only be operated as a back-up/emergency power supply. Emissions from the generator (carbon dioxide, nitrogen oxide and particulate matter) will be infrequent, due to the low usage, and the impact will be imperceptible. Due to the low/infrequent traffic movements associated with maintenance

³⁰ Stated as "809m from the site boundary" in section 6.4.2.1 of the EIAR.

	vehicles, the impact will be imperceptible and there will be positive impacts on air quality overall due to the displacement of fossil fuels.
	• Microclimate: New permanent hardstanding is c. 3% of the wind farm site and consequently there will be no direct or indirect impact on air temperature and microclimate. There will also be the loss of 88ha of conifer plantation but there will be no direct or indirect impact on temperature and microclimate due to clear felling because it forms part of the cycle of commercial forestry.
	 Macroclimate: Total carbon losses is expected to be between 220,298 and 243,036 tonnes of CO₂ with between c. 4,634,490 and 5,184,375 tonnes of CO₂ emissions displaced over the proposed 35-year lifetime i.e. between 132,414 and 148,125 tonnes of CO₂/annum. The payback time for the manufacture, construction and decommissioning phases (including carbon losses from soil, felling of forestry etc.) is calculated to be between 1.6 and 1.7 years but this is considered an overestimation as the carbon calculator does not account for replant lands or drained/cultivated bog conditions.
Decommissioning	• Air Quality: Truck movements will be significantly less than the construction phase and will potentially result in a slight temporary impact. Emissions from machinery is not likely to result in significant impacts.
Cumulative	• Air Quality: Impacts may arise if the development phases of other large projects occur in tandem with the wind farm construction, grid connection and turbine delivery route works. This could result in slight increased traffic and dust emissions, however, no significant cumulative effects on air quality due to dust or GHG emissions are anticipated with mitigation. There will be no net CO ₂ emissions from operation of the proposed wind farm. Emissions of CO ₂ , NO _x , SO ₂ or dust during the operational phase will be minimal, relating to the maintenance vehicles, and there will be no measurable negative cumulative effect with other developments on air quality.
	• Climate: Cumulative impacts associated with the construction phase due to GHG emissions from plant and machinery will be short term and not significant. In terms of climate and carbon, the wind farm will act cumulatively with other renewable energy projects in reducing CO ₂ emissions by displacing fossil fuel in the production of electricity, resulting in a long-term slight-moderate positive impact. The decommissioning phase will be similar in nature to the construction phase but will be of reduced magnitude and temporary in duration.

Table AQ1: Summary of Potential Effects

Mitigation

- 10.8.19. In terms of air quality, the EIAR and the accompanying CEMP set out a series of mitigation measures for the construction phase, which generally comprise best practice construction methods. These include:
 - Construction of internal access roads with graded aggregate finishes prior to commencement of other major construction activities, preventing dust;
 - Use of a water bowser to spray work areas and haul roads in order to suppress dust migration;
 - Covering of loads which could cause a dust nuisance;

- Re-vegetation of earthworks and exposed areas/soil stockpiles as soon as practicable to stabilise earthworks;
- Control of access and egress of construction vehicles, with defined routes and onsite speed limits;
- Construction vehicles and machinery will be serviced and in good working order;
- Wheel washing facilities at the entrance/exit points of the site;
- Implementation of a Dust Management Plan (DMP) as part of the final CEMP.
- Cleaning of facades of dwellings, should soiling take place;
- Ensuring all vehicles switch off engines when stationary;
- Ensuring vehicle emissions are minimised through regular servicing.
- 10.8.20. No mitigation measures are proposed for the operational phase, given that a positive impact on air quality is predicted. Measures during decommissioning will be similar to the construction phase, with the access tracks and underground cables left in situ.
- 10.8.21. In terms of climate, as no significant impacts on climate are predicted during construction, operation and decommissioning of the proposed wind farm no mitigation measures are proposed. In terms of the operational phase, the proposed wind farm development will have a positive effect on climate due to the displacement of fossil fuels and will contribute to the CAP24 target of 9GW from onshore wind by 2030.

Residual Impacts

- 10.8.22. In terms of air quality, it is anticipated that the proposal will result in slight to moderate residual impacts from fugitive dust emissions during construction i.e., excavations, felling, earthmoving etc. These will be localised and specific to elements of construction, and therefore temporary in nature and without permanent impacts.
- 10.8.23. Vehicle emissions will reduce significantly following construction and no significant impacts are anticipated with decommissioning expected to be similar but reduced in magnitude. Maintenance traffic during the operational phase will have an imperceptible impact. The traffic emissions associated with recreational walkers using the amenity trail will lead to a long term, imperceptible impact on air quality in the area. During operation, the proposed development will result in the avoidance of emissions from fossil fuel generators which will result in a positive residual effect on air quality.

- 10.8.24. In terms of climate, it is anticipated that there will be positive operational residual impacts through fossil fuel displacement. At the microclimate level, the proposal covers c. 3% of the site area with hard surfaces (hardstanding, access tracks, structures etc.) and the EIAR states that this would not negatively impact the vegetation necessary to maintain a microclimate. In terms of macroclimate, the EIAR estimates a net displacement of between 132,414 and 148,125 tonnes of CO₂/annum. This results in a positive impact by removing the GHG emissions from traditional energy generation (i.e. biomass, peat, etc.), and thus improving human health overall.
- 10.8.25. The EIAR states that no direct or indirect impact on air temperature, microclimate or macroclimate has been associated with the proposed development due to the location of the site which is predominately an upland commercial forestry and the "rolling" nature of the grid connection works which will avoid concentrated works in one area.

Assessment of Direct and Indirect Significant Effects

- 10.8.26. I have examined, analysed and evaluated Chapter 6 of the EIAR, all of the associated documentation and submissions on file in respect of air quality and climate. Having regard to the nature and location of the proposed development, I am satisfied that the direct and indirect effects of the development on air quality are short-term, imperceptible and not significant, arising during construction and decommissioning. In the longer term, during operation, it will be positive in relation to both air quality and climate as there will be minimal emissions to the atmosphere, with a net positive residual impact on climate due to the displacement of between 132,414 and 148,125 tonnes of CO₂ per annum, although this is not considered to be a significant effect.
- 10.8.27. With the implementation of proposed mitigation measures, which are established good construction practices for controlling dust, I am satisfied that construction effects will not be significant, and I fully accept that there will be minimal operational emissions.
- 10.8.28. Given the location of the proposal, cumulative impacts will only arise in concert with other large-scale development, including renewable energy projects, in the vicinity of the wind farm site during construction or decommissioning, and therefore I am fully satisfied that no cumulative operational effects are likely to occur. In this regard, I note that some of the 'permitted projects' in the surrounding area are now built and fully operational including Esk Wind Farm and Knockglass Solar Farm (EIAR, Section 6.7).

- 10.8.29. I am also satisfied with the applicant's further information response in respect of dust nuisance/soiling impacts and I accept that a DMP will form part of the final CEMP. That said, the motivation for the Council's comments was reasonable given the air quality monitoring data used was from 2000 and related to an urban part of Cork City.
- 10.8.30. Overall, I accept the conclusions reached in the EIAR that the impacts on air quality and climate associated with the proposed development on its own, or in combination with other existing, permitted or proposed developments are not likely to be significant and will be mitigated by the measures outlined in the EIAR, including the CEMP.

Conclusion on Air Quality and Climate

10.8.31. I have considered all of the written submissions made in relation to air and climate and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on air and climate can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposal would not have unacceptable direct, indirect or cumulative impacts on air and climate.

Noise and Vibration

Issues Raised

- 10.8.32. The submission from Jerry O'Neill highlights a specific concern in relation to noise pollution on his dwellinghouse, arising from turbines T1, T11 and T12 in particular. Concerns regarding setback distances to dwellings and infrasound were also raised.
- 10.8.33. The local authority's Environment Section had no substantive objection but sought clarification on a number of issues including all properties (un/occupied and permitted) in the study area and illustrated on a noise contour map; a map of noise sensitive receptors; background night time noise levels at each of the noise monitoring locations; and the potential number/location of dwellings that could be impacted by mitigation (temporary noise barrier) where works noise exceedances could occur.

Examination, Analysis and Evaluation

10.8.34. Chapter 7 of the EIAR deals with noise and vibration. It examines the noise and vibration effects associated with the proposed development. It is supported by:

- Figures 7.1 and 7.2,
- Tables 7.1 to 7.22.,
- Appendix 7.1 to 7.8, and
- the further information response (Section 3.4.1.4).
- 10.8.35. I have examined this chapter and the associated figures and tables. It focuses on potential noise and vibration effects of the proposal on its surrounding environment.
- 10.8.36. I note that potential construction noise and vibration impacts have been determined with reference to Part 1 (Noise) of the *Code of Practice for Noise and Vibration Control on Construction and Open Sites* (BS 5228:2009+A1:2014). Potential operational noise³¹ impacts associated with the proposed project have been determined with reference to *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* (Institute of Acoustics, UK, 2013).
- 10.8.37. The EIAR notes that the dWEDG 2019 have yet to be adopted and as such, operational noise is compared with noise limits derived in accordance with the WEDG 2006 (see section 6.3.8 to 6.3.10 above). The applicant has however indicated that they can demonstrate compliance with the dWEDG noise limits if they are adopted prior to a decision by the Board. This is considered to be an acceptable approach.
- 10.8.38. The EIAR also notes that the hub height range is the only element of the turbine dimensions that influence the operational noise and a minimum hub height of 102.5m and maximum of 110.5m have been assessed. Variation of blade length is accounted for by the manufacturer in their sound power data which is used for modelling.
- 10.8.39. Given the distance to sensitive receptors I note that construction vibration is scoped out except in relation to grid connection works due to the use of pneumatic breakers.
- 10.8.40. I also note that the EIAR accepts that whilst wind turbines may produce low frequency noise at levels above the threshold of audibility, it states that there is no evidence of health effects arising from low frequency noise generated by wind turbines. On this basis, an assessment of infrasound and low frequency noise has been scoped out.
- 10.8.41. Operational vibration from the turbines and substation have also been scoped out on the basis of distance to the nearest sensitive receptors i.e. >800m, 1km respectively.

³¹ Operational noise includes noise from the proposed wind turbines and the substation.

- 10.8.42. The assessment methodology includes a review of appropriate guidance and specification of suitable construction and operational noise / vibration criteria; characterisation of the receiving noise environment; prediction of the associated noise impacts; and an evaluation of the noise impacts, mitigation and residual impacts.
- 10.8.43. The EIAR states that construction and decommissioning noise has been assessed by comparing predicted construction activities against best practice construction noise criteria at the nearest residential dwellings to the construction activities. In terms of operational noise, I note that the study area includes all residential dwellings with a predicted noise level greater than 35dB L_{A90}. I note this to be a conservative approach.
- 10.8.44. I also note that the noise emissions from the surrounding wind farms of Boggeragh (1 and 2), Carraigcannon, Bawnmore and Esk are considered in the cumulative assessment and the operational study area of 35dB L_{A90} as presented in Figure 7.1³².
- 10.8.45. In terms of construction noise criteria, the EIAR notes that there is no national guidance relating to the maximum permissible noise levels of a construction project. In the absence of such limits, the EIAR defers to other industry guidelines and standards³³. This is acceptable and in keeping with section 3.1 dWEDG. In this regard, Table 7.1 sets out the threshold limit to be applied which is dependent on the existing ambient noise levels (rounded to the nearest 5dB) and I note that the closest dwellings are afforded Category A designation (65dB L_{Aeq,1hr} during daytime periods). I also note that appropriate noise criteria is 45dB L_{Aeq,1hr} for night-time turbine delivery.
- 10.8.46. Tables 7.6 to 7.12 outline the likely plant and the predicted noise levels at the nearest receptors for the various construction activities including tree felling, access roads, hardstanding, foundations etc. Larger plant includes harvesters and rock breakers etc. The largest array of plant is associated with the substation construction (Table 7.12).
- 10.8.47. The receptors are identified as R405, R745 and R1052. I note that R405 is the nearest dwelling to a borrow pit (c. 825m), R745 is the closest to the main construction compound (c. 700m) and R1052 which is c. 1.36km away from the substation area.
- 10.8.48. The EIAR states that the most intensive period of the works programme will be Months 10 to 11 with multiple construction activities taking place concurrently i.e., access

³² It includes 672 no. noise sensitive locations (NSLs) (commercial and/or residential, and unknown), 67 no. of which are directly related to the noise emissions from the proposed wind farm only.

³³ See 10.8.36 above.

roads, hardstanding and foundations, turbine installation and substation construction. The cumulative noise from these activities at R405, where highest noise level is predicted, will be less than 57dB LAeq, 1hr which is below the noise limit of 65dB LAeq, 1hr.

- 10.8.49. As noted, in terms of operational noise criteria, and in the absence of detailed guidance from the WEDG 2006, the EIAR states that best practice is to consider the guidance contained in ETSU-R-97 and the UK's Institute of Acoustics 'Good Practice Guide'. I also note that noise predictions have been carried out using ISO 9613, *Acoustics Attenuation of Sound during Propagation Outdoors* and the EIAR states that only the worst-case downwind condition has been considered in the noise impact assessment.
- 10.8.50. In this regard, I acknowledge the conservative approach adopted by the applicant and I specifically note that barrier attenuation, such as the topographic screening effects of the surrounding terrain, has not been accounted for in the noise prediction model. Although I do acknowledge a 'valley correction' (+3dB) for each wind turbine / noise sensitive location combination (Appendix 7.5) and this is an acceptable approach.
- 10.8.51. Sound power level data has also been based on a worst-case from a range of turbines that meet the dimensional envelope of the proposal and is detailed in Appendix 7.4. The predicted turbine noise L_{Aeq} has been adjusted by minus 2dB to give the equivalent L_{A90} as suggested in the Institute of Acoustics 'Good Practice Guide'.
- 10.8.52. Table 7.14 summarises the turbine sound power levels for the various turbine models.
- 10.8.53. I note that assessment includes the cumulative noise from all on-site noise sources.In addition to the turbines noise, noise will be produced by the substation transformer.A worst-case scenario has been selected for transformer noise output (Table 7.16).
- 10.8.54. Tables 7.17 and 7.18 of the EIAR detail predicted and cumulative noise levels adjacent to 28 receptor locations closest to the proposed wind farm and at controlling properties adjacent to neighbouring wind farms. The predicted and cumulative noise levels are detailed in Appendix 7.5 and 7.6 respectively. The EIAR notes that the predicted and cumulative noise levels are for a worst-case scenario with noise sensitive receptors downwind of the proposed wind farm, however in practice, receptor locations will not be downwind of all noise sources and actual noise levels will be lower than those presented. As noted above, sound power data was sourced from manufacturers spec.

Baseline

- 10.8.55. In terms of baseline, it should be noted that the Boggeragh Wind Farms (1 and 2) were not active during my site inspection, presumably due to 'cut out' wind speeds, and therefore there was no observable noise or 'blade swish' at the site, and particularly near the northern cluster which is suggestive of a low noise environment.
- 10.8.56. Baseline noise monitoring was undertaken at 17 no. receptor locations³⁴ surrounding the proposed wind farm site as detailed in Table 7.3 and illustrated in Figure 7.2.
- 10.8.57. The prevailing daytime background noise levels³⁵ at 15 no. noise monitoring locations are presented in Table 7.4. I note that locations N13 and N16 were removed due to tampering with the monitoring equipment and the proximity to a noisy watercourse, respectively. The results indicate a low background noise environment at lower wind speeds, as expected. The corresponding night-time noise levels have not been outlined other than at selected locations in Appendix 7.1 (i.e., N15, N17, N18 and N19), although this is not critical given the fixed night-time limit detailed in the WEDG.
- 10.8.58. Moreover, I note that the further information response addresses the concerns of the Council in relation to the impact of night-time deliveries on noise sensitive locations.
- 10.8.59. Derivation of wind farm noise limits is detailed in section 7.4.2 of the EIAR with the derived daytime and night-time noise limits for each of the noise monitoring locations outlined in Table 7.5. In this regard, I note the variable daytime limits ranging from 37.5 45dB L_{A90, 10min} at 2m/s wind speed to 45 57.1dB L_{A90, 10min} at 14m/s wind speed. I also note the fixed night-time limit of 43dB L_{A90, 10min}, as specified in WEDG.
- 10.8.60. In establishing the derived wind farm noise limits, I note that the EIAR takes into account the guidance outlined in ETSU-R-97, namely the number of dwellings in neighbourhood of the wind farm; the effect of noise limits on the kWh; and the duration and level of exposure. On this basis, it recommends that a fixed limit of 37.5dB LA90 for low background noise conditions should apply for the proposed project. I note that this is the median of the range outlined in WEDG for such conditions and represents a conservative limit which would afford sufficient protection to neighbouring dwellings.

³⁴ Locations N2 - N8 and N10 - N19.

³⁵ Standardised at 10m Height Wind Speed (m/s).

Potential Effects

$10.0.01$. I Olemulai encelo, as identifica in the $\Box i/11$, are summanised in rapie 140 r pero	10.8.61.	Potential effects.	as identified in the EIAR.	, are summarised in Table NV1	below
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Project Phase	Potential Effects
Do Nothing	• The noise environment in the vicinity of the proposed wind farm site will remain largely unchanged.
Construction	• Site Traffic: Potential for the night criteria (45dB) to be exceeded at properties within 40m from the road edge but this will be a brief temporary significant effect while the vehicles are passing the properties.
	• Tree Felling: Predicted noise at the nearest NSL (R745) is below the daytime noise limit (65dB), thus noise associated with the felling activity is expected to have a slight impact and temporary in duration.
	• Borrow Pits: It is expected that a rock breaker and crusher will be required at the borrow pits as a worst-case scenario. Noise from all borrow pits operating simultaneously does not exceed 54.5dB L _{Aeq,1hr} and therefore, the predicted noise at the nearest NSL (R405,) is below the daytime noise limit of 65dB L _{Aeq,1hr} , thus noise associated with the borrow pit activity is expected to have a slight to moderate impact and temporary in duration.
	• Access roads, Hardstands and Drainage: Predicted noise level from the construction activities is 41.2dB L _{Aeq,1hr} which is below the 65dB L _{Aeq,1hr} noise limit, thus the preparation of access roads, hardstands and drainage are expected to have a slight impact and temporary in duration.
	• Turbine Foundations: Predicted noise level from the construction activities is 48.4dB L _{Aeq,1hr} which is below the 65dB L _{Aeq,1hr} noise limit, thus the preparation of turbine foundations is expected to have a slight impact and temporary in duration.
	 Installation of Turbines: Only one turbine will be erected at a time and a worst case of the two cranes lifting turbine components 100% of the time at one location is assumed along with delivery of turbine components. Predicted cumulative noise level at receptor R405 is 38.6dB L_{Aeq,1hr}. Predicted noise levels are below the 65dB L_{Aeq,1hr} noise limit, thus construction works associated with the installation of the wind turbines are expected to be not significant and temporary in duration.
	• Substation: Cumulative predicted noise levels for the worst combination of plant (preparation of hardstanding areas) are predicted to be 45.6dB L _{Aeq,1hr} at the nearest occupied dwelling (R1052) which is below the construction noise limit of 65dB L _{Aeq,1hr} , thus the works associated with the construction of the substation are expected to have a slight impact and temporary in duration.
	• Grid Connection: Predicted noise levels from grid connection works may be above the noise limit of 65dB L _{Aeq,1hr} , albeit for short durations at a limited number of dwellings given the 'rolling' nature of the grid connection works i.e. typically less than 3 days. Where works are to occur over an extended period, a temporary barrier or screen will be used to reduce noise level below the noise limit, thus the works are expected to have a significant temporary impact.
Operation	• Predicted noise levels from the proposed wind farm are all below the daytime and night-time noise limits for all hub heights within the range proposed (102.5m to 110.5m). However, at some receptor locations, a new source of noise will be introduced into the soundscape and it is anticipated that there will be a long-term moderate significance of impact on the closest dwellings to the proposed wind farm.

Decommissioning	•	Activities, such as disassembling the above ground turbine components, will be undertaken during daytime hours, and noise, which will be of a lesser impact than for construction, will be controlled through the relevant guidance and standards in place at the time of decommissioning.
	•	I note that foundations will be covered over and allowed to re-vegetate naturally and recreational trails and signage, internal site access tracks and grid connection infrastructure, including the substation and ancillary electrical equipment forming part of the national grid, will be left in situ.
Cumulative	•	Construction Phase: It is not anticipated that there will be cumulative impacts with other large- or small-scale developments in the vicinity of the proposed wind farm site given the distance between the developments and nature of the works proposed as part of these developments.
	•	Operational Phase: Predicted cumulative noise levels comply with the daytime and night-time limits at the majority of noise sensitive locations; however, exceedances are observed at R777 (daytime) at wind speeds of 7 and 8 m/s (standardised) and at R2340 (daytime and night-time) at wind speeds of 8 m/s and above (standardised). The EIAR states that the noise modelling assumed that this receptor is downwind of all turbines but this will not be physically possible in practice, and the actual noise level will be lower.

 Table NV1: Summary of Potential Effects

Mitigation

- 10.8.62. In terms of construction noise, the EIAR notes that on-site activity will be below the noise limits set out in BS 5228-1:2009+A1:2014 but includes several mitigation measures to minimise any potential impacts, nonetheless. These include:
 - Restricting works traffic movements along access routes to standard working hours and excluding Sundays, unless otherwise agreed for concrete pours etc.
 - Preventing turbine deliveries vehicles from waiting outside residential properties with their engines idling at night-time and informing local residents of any activities likely to occur outside of normal working hours.
 - Undertaking works in consultation with the local authority as well as the local residents through the Community Liaison Officer (CLO).
 - Carrying out works in accordance with the guidance set out in BS 5228:2009+A1:2014, and the noise control measures set out in the CEMP, and ensuring proper maintenance of plant.
 - Fitting all vehicles and mechanical plant with effective exhaust silencers and maintaining in good working order, machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.

- Generally restricting construction operations to between 0700-1900 hours Monday to Friday and 0700-1300 hours on Saturdays, unless otherwise agreed with the local authority.
- Using a temporary barrier or screen where works at elevated noise levels are required for longer than 3 days at a given location and limiting the number of plant items operating simultaneously, where reasonably practicable.
- 10.8.63. In relation to operational noise, and having regard to the predicated exceedances at receptor R777, some of the turbines will, as a worst-case scenario, be operated in noise reduced modes (NRO)³⁶ to ensure the proposal is compliant with daytime noise limits. The EIAR notes that this is amongst a range of mitigation strategies and suggests that there may be other configurations that would allow noise limits to be met with a mitigation strategy to be specified for the procured models prior to construction.
- 10.8.64. The dominant noise at receptor R2340 is from Esk and Boggeragh 2 wind farms. Noise emissions from the proposal are predicted to be at least 10dB below the predicted operational noise from adjacent wind farms and on that basis, the contribution to the cumulative noise will be a negligible and no specific mitigation is outlined. I do however acknowledge that an operational noise survey will be undertaken with mitigation measures refined to ensure noise limit compliance overall.
- 10.8.65. In terms of decommissioning, noise impacts will be mitigated by restricting works traffic movements along access routes to standard working hours and excluding Sundays, unless otherwise agreed with the local authority, and ensuring that works are carried out in accordance with the policies and guidance at the time of the works and restricted to normal working hours such as those listed in section 10.8.62 above.

Residual Impacts

- 10.8.66. Residual construction impacts range between not significant to slight and temporary in duration based on construction and decommissioning activities lasting longer than 1 month and below the construction noise limit of 65dB L_{Aeq,1hr} at residential dwellings.
- 10.8.67. Where grid connection works occur over an extended period (i.e. longer than 3 days) at a given location, a temporary barrier will be used to reduce noise level below limits and reduce any potential impact resulting in a moderate short-term residual impact.

³⁶ Reducing the rotational speed of the turbines, with a resultant loss of electrical energy production.

10.8.68. With mitigation measures, the cumulative operational noise levels of the proposed and adjacent wind farms meet the daytime and night-time noise limit derived using WEDG 2006 and are therefore not considered to be a significant impact. However, for some receptors the EIAR notes that a new source of noise will be introduced into the soundscape and expects that there will be a slight to moderate significance of impact, with dwellings closest to the project with a long-term moderate significance of impact.

Assessment of Direct and Indirect Significant Effects

10.8.69. I have examined, analysed and evaluated Chapter 7 of the EIAR, all of the associated documentation and submissions on file in respect of noise, including the further information response which addresses some fairly benign local authority concerns.

Construction and Decommissioning

- 10.8.70. I note the range of activities associated with the construction phase, including felling, excavations, development of a borrow pit, civil works, foundation construction etc. as well as the short-term nature of the construction period for the proposed development.
- 10.8.71. While there are no national limits for construction noise, I consider that the nature and extent of the works associated with the proposal would not be atypical of similar projects and that the noise nuisance caused by such activities would be short-term.
- 10.8.72. The applicant has set out site management measures and protocols in the EIAR and associated CEMP which generally comprise good practice construction methods. I am satisfied that the implementation of these measures would be sufficient to reduce noise nuisance and disturbance during the construction phase to an acceptable level, noting the significant separation distances (c. 800m) to the nearest sensitive receptors.
- 10.8.73. I do not consider that construction phase noise impacts would be significant and I accept that the decommissioning phase will be similar, but of less magnitude given that various elements will be left in situ. I therefore consider it reasonable to draw similar conclusions for the decommissioning phase as those drawn for the construction phase, i.e. that the impacts would be short-term and would not be significant.
- 10.8.74. Should the Board be minded to grant permission, I recommend that suitable conditions be attached regarding the CEMP and limits on the days and times when construction can be undertaken, thus reducing potential adverse impact to residents nearby.

Operational

- 10.8.75. Having reviewed the information submitted by the applicant in the EIAR, associated appendices and the further information response, I consider that a robust noise assessment, informed by adequate background noise monitoring, was undertaken.
- 10.8.76. I note in this regard that the noise modelling utilised a number of conservative or worstcase assumptions, including that all noise sensitive locations are downwind of all wind turbines and the use of the worst performing turbine from a noise perspective. As a result, the EIAR contends that the actual noise levels from the proposal will be less than those predicted and the extent of required mitigation may also be reduced.
- 10.8.77. The assessment demonstrates that the proposed development, regardless of hub height within the specified range, complies with the daytime and night-time noise limit criteria at noise sensitive receptors as per the WEDG 2006. In the cumulative impact scenario, there is compliance with daytime noise limits at all locations bar R777 and R2340 at wind speeds of 7 and 8 m/s and 8 m/s and above respectively, however the dominant noise is from the existing Esk and Boggeragh 2 wind farms in the case of the latter. There are also night-time exceedances at R2340 but its contribution to cumulative noise is negligible as it is proposed to maintain the proposed wind farm at 10dB below the predicted operational noise from these surrounding wind farms.
- 10.8.78. As noted above, the EIAR includes conservative assumptions, and depending on the final choice of turbine, the actual noise is likely to be less, resulting in less need for turbine curtailment. Ultimately, the derived noise limits set out in the EIAR will guide the turbine specification and mode of operation. Should the Board be minded to grant permission, I recommend that a suitable condition be included to limit daytime and night-time noise at noise sensitive receptors in line with the WEDG 2006 and that the applicant be required to submit and agree a noise compliance monitoring programme for the proposed development with the planning authority, to include the mitigation measures required to achieve compliance with the noise limits, such as the curtailing of particular turbines in the case of R777. The condition should also require that the results of the initial noise compliance monitoring be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm.
- 10.8.79. Subject to compliance with the identified mitigation measures and noise limits and noting the significant separation distances between the proposed turbines and the

nearest residential receptors (c. 800m), I do not consider that the proposal would be likely to have a significant impact on sensitive receptors by way of noise disturbance.

- 10.8.80. In terms of the concerns raised by Jerry O'Neill, and based on the Eircode provided in his submission, I note that his property is located just outside the 2000m turbine buffer as illustrated in Figure 2.15 of the further information response, however actual Eircodes have not been provided in Appendix 7.3 of the EIAR, as suggested in the response. I have however been able to confirm the corresponding receptor ID (R386) using the co-ordinates provided and I note that turbines T1, T11 and T12 are c. 2km and 2.9km from his property and on the opposite side of the Musheramore ridgeline.
- 10.8.81. Having regard to Tables 7.17 and 7.18, and Tables 7.19 and 7.20 there are no predicted or cumulative exceedances on his property within the design envelope.
- 10.8.82. In addition to 'normal' operational noise impacts, some parties also contend that the proposed development will result in noise impacts as a result of particular characteristics of wind turbine noise, such as infrasound or low frequency noise.
- 10.8.83. This is addressed in section 7.2.3.2 of the EIAR with reference to numerous international studies. While the dWEDG has not been adopted, they do include a relatively up-to-date analysis of various environmental matters. In relation to infrasound, they state that "there is no evidence that wind turbines generate perceptible infrasound". This is stated to be due to advancement in design which has "effectively eliminated continuous infrasound elements from wind turbine noise".
- 10.8.84. Having regard to the information submitted by the applicant, including international research, and noting the nature of the proposed development and the substantial separation distances to the nearest residential receptors (in excess of 800m), there is no evidence before me to indicate that the proposal would result in infrasound, low frequency noise of a type or magnitude that would impact on people or environment.
- 10.8.85. I have also examined the further information response which includes commentary and figures in respect of the noise concerns raised by the local authority. I note that it clarifies a number of issues but does not fundamentally alter the EIAR conclusions.

Conclusion on Noise and Vibration

10.8.86. I have considered all of the written submissions made in relation to noise and vibration and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts from noise and vibration can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am satisfied that the proposed development would not have unacceptable direct, indirect or cumulative impacts.

Land, Soil, Hydrogeology and Geology

Issues Raised

- 10.8.87. The submission from John O'Sullivan (Horsemount) highlights a specific concern in relation to impacts on his water source, a spring well close to the locus of turbine T6.
- 10.8.88. Other observers also raised concerns in relation to this topic, including peat slippage, pollution of underlying aquifers and impacts on private wells. Sediment run-off and potential impacts freshwater pearl mussel habitat was also raised. This issue is also addressed under 'biodiversity', as noted above, and is equally considered in the AA (section 11). There is also an overlap with 'water and hydrology', as discussed below.
- 10.8.89. For completeness, and as noted above, the DHLGH-DAU had raised similar concerns at scoping stage in relation to the impacts on freshwater pearl mussel and other protected species in the Blackwater River (Cork/Waterford) SAC as a result of soil slippage, siltation or increase in contribution to hydrographic peaks downstream.
- 10.8.90. The OPW also noted a history of landslides associated with such development.
- 10.8.91. GSI have no concerns and commend the use of their landslide susceptibility maps.
- 10.8.92. The local authority's Environment Section had no objection subject to conditions.

Examination, Analysis and Evaluation

- 10.8.93. Chapter 9 of the EIAR deals with land, soils, hydrogeology and geology and is supported by:
 - Appendix 9.1 and 9.2,
 - Figures 9-1 to 9-10, and
 - Tables 9-1 to 9-12.
- 10.8.94. I have examined this chapter and the supporting documents. It focuses mainly on the potential impacts on the existing geological conditions within the study area, including the hydrogeological attributes e.g. aquifers, springs and the groundwater regimes etc.

- 10.8.95. There is some overlap with Chapter 10 in terms of water and hydrology and this chapter is also relevant to the topic of 'biodiversity' as outlined in Chapter 8A and 8B.
- 10.8.96. The assessment methodology includes a desktop study of OSI mapping (current, historical and ortho) and the General Soil Map of Ireland, in addition to GSI and EPA mapping and data to determine existing the hydrological regime. Site assessments were undertaken during January and August 2020 and March 2021 and included walkover inspection and peat depth probing and slope stability assessments. Shear strengths were taken at regular intervals across the site. Finally, geotechnical investigations carried out in March and May 2021 included trial pits and boreholes.

Baseline

- 10.8.97. GSI quaternary geology map shows the turbines in the southern portion of the site located within areas classified as Till derived from Devonian Sandstones (T1, T2 and T3, and T9 to T12) and areas of bedrock outcrop or subcrop (T5 to T8). Areas of blanket peat are concentrated in the north and north-eastern area of the site. The EIAR states that this corresponds to "T14 to T21", however this evidently refers to a previous iteration of the scheme. I note from the map that T13, T14, and T17 to T20 are located on blanket peat and this corresponds to elsewhere in the EIAR. The majority of the grid connection is underlain by Till derived from Devonian Sandstones with limited areas of bedrock sub-crop or outcrop and alluvium indicated along the proposed route. I note that this fissure of alluvium corresponds to watercourses.
- 10.8.98. GSI bedrock geology map shows that the site is predominantly underlain by the Devonian Ballytrasna Formation, which is described as dusky-red mudstone with subordinate pale-red sandstones. Part of the site, extending roughly in an L-shape from turbines T1 to T9 is underlain by the Caha Mountain Formation, which is described as purple and green siltstones and sandstones. The grid connection route traverses the Ballytrasna Formation and Caha Mountain Formations, for the majority of the route. Its southern extent is underlain by the Gortanimill Formation. The Gortanimill Formation comprises medium to fine-grained green sandstone with some red siltstone. Site investigations found weathered bedrock at depths of 0 to 3.8mBGL.
- 10.8.99. Groundwater Vulnerability within the main wind farm site is classified as ranging from 'High' to 'Extreme' with areas of exposed bedrock ('X - Rock Near Surface') also present. Based on the GSI aquifer vulnerability mapping, overburden deposits are

generally between 3-10m deep centrally on site; 3 to 5m deep in the north and east of the site; and greater than 3m deep in the west, south and part of the north of the site.

- 10.8.100. The majority of the wind farm site, including grid connection, is located within the Ballinhassig West Groundwater Body (GWB), while the north-eastern extremity lies within the Glenville GWB (i.e. turbines T14, T15, and T18 to T20). Aquifer classification at the wind farm site is either LI (Locally important aquifer - bedrock which is moderately productive only in local zones) or PI (Poor Aquifer - Bedrock which is generally unproductive except for local zones), which matches underlying formations. The Glenville GWB is also LI i.e., Locally important - moderately productive bedrock.
- 10.8.101. That said, the EIAR states that 'Excellent' yielding wells are found within some of the Old Red Sandstone units (usually associated with boreholes that are located in fault zones) and notes that diffuse recharge will occur via rainfall percolating through the subsoil or areas of outcropping rock according to the GSI. It also states that the generally low permeability of the aquifer and the sloping topography in the north of the GWB indicate that a high proportion of aquifer recharge will discharge rapidly to surface waters. Groundwater flows within the GWB are noted as relatively short (from 30-300m), with groundwater discharging to springs, or to streams crossing the aquifer.
- 10.8.102. The EIAR notes that the Ballinhassig West and the Glenville WFD groundwater bodies are classified as having 'Good' status however it also notes that there is an area of the Ballinhassig West groundwater body that is classified as having a 'Poor' status.
- 10.8.103. There are no Public Supply Source Protection Areas within the boundary of the wind farm site. GSI data identifies 6 no. Groundwater Wells within 1km of the site, although the EIAR assumes that all houses within 1km of the site boundary have a private well. I accept that this is a conservative approach. The EIAR also notes that the underlying bedrock (Waulsortian Formation) at the eastern extent of the grid connection is prone to karstification although there are no karst features recorded within the proposed site.
- 10.8.104. There are no recorded geological heritage features within the site. The closest such site is located c. 3km east of the site, the Boggeragh Mountains. There are also a number of quarries surrounding the study area, none of which are located within the site boundary. It is noted that the GSI aggregates database indicates a very low to moderate potential for crushed rock and a very low to low for granular aggregate.

- 10.8.105. Peat probing (124 no. locations) ranged between 0 to 3mBGL with an average depth of 0.6m. Localised readings, mainly in the north-east, recorded peat depths of 2 to 3m. Site investigations comprised trial pits and rotary boreholes (5 no. locations).
- 10.8.106. Peat deposits reflected the walkover probing and were limited to the northern area with typical thickness between 0.1 to 2.7m. Peaty topsoil was present in the southern area and topsoil, a peaty sandy gravelly clay, was encountered in areas throughout the site in addition to areas of made ground. These topsoil/peat deposits overlay cohesive/granular Glacial Till deposits and weathered bedrock at depths of between 0 to 3.8m BGL. Groundwater seepages were recorded at 21 no. (out of 64 no.) trial pit locations with strike depths varying from 0.2 to 3mBGL. I note that strikes were recorded at the locus of turbines T2, T11, T13, T19, T20 and T21 according to Table 9-9 of the EIAR. Again, this evidently refers to a previous iteration of the scheme.
 - 10.8.107. With regard to the site topography, it is noted that slopes of the southern areas are characterised by elevated lands with typical elevations of between 323 to 430mAOD, with steep to moderate slopes to the west of the site boundary. Slopes at proposed infrastructure locations here generally range from between 2 to 16°. The northern portion, which includes turbines T13 to T20, comprises elevated lands sloping relatively steeply to the south (ranging from 2 to 18°). Slopes at proposed turbine locations in this portion of the development range from gentle (2°) to moderate with a maximum slope angle of 16° at turbine T16. Slopes at the proposed borrow pits BP01, BP02 (western area of the site) are considered moderate to steep, with slopes of 14° and 16°, respectively. Slopes along the proposed access roads range from 2° to 18°.
 - 10.8.108. The GSI landslide susceptibility database locates the proposed development within areas of generally of 'Low' to 'Moderately High' susceptibility. The latter relates to the southernmost area and the northern area along with the westernmost area where the barrow pits are located. The EIAR states that no evidence of slope instability was observed and that there are no historical records of landslide activity in the vicinity.
 - 10.8.109. Notwithstanding, a risk assessment was carried out in accordance with the *Peat Landslide Hazard and Risk Assessments* (Scottish Executive, 2017), wherein the potential for a landslide risk is defined as the following:
 - Peat is present at the development site in excess of 0.5 m depth, and;
 - There is evidence of current or historical landslide activity at the site, or;

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- Slopes > 2° are present on-site, or;
- The works will impinge on the peat covered areas and cannot be relocated to avoid peat covered areas.
- 10.8.110. As the slope angles and peat depths found in the north and north-east of the site met these thresholds, a peat stability assessment was deemed necessary to determine the Factor of Safety (FoS). The analysis, which considered the turbine locations, access roads and borrow pits, resulted in a FoS above the minimum acceptable value of 1.3.

Potential Effects

10.8.111. Potential effects, as identified in the EIAR, are summarised in Table GH1 below.

Project Phase	Potential Effects
Do Nothing	• It is likely that the current land uses will continue for the foreseeable future and the impact on the land, soils and geology would remain largely unaltered as a result.
Construction	• Tree Felling: Could result in soil erosion due to the use of heavy machinery and exposure of underlying soils to surface water runoff. This could also lead to an increase in sediment and nutrient concentrations in the surface water run-off which may in turn impact groundwater in the underlying aquifer (LI). Machinery fuel and oil storage/use presents potential for spills and leaks which could contaminate underlying exposed soils and groundwater. The magnitude of these potential impacts is of moderate significance.
	• Earthworks (geological regime): Soil compaction from construction traffic movements, and particularly within areas of highly compressible soft deposits i.e., the northern area where peat is present. This could lead to an increase in surface water runoff due to reduced rainfall infiltration and an increase in erosion of overburden deposits. Machinery fuel and oil storage/use presents potential for spills and leaks which could contaminate underlying exposed soils. Imported engineering fill and excavated soils will be exposed and in temporary stockpiles. These soils will be subject to erosion by wind and rain which could deposit silt in streams with an indirect impact on surface water quality. The magnitude of these potential impacts, prior to mitigation, is considered to be of moderate significance.
	• Earthworks (hydrogeological regime): Potential for groundwater pollution from the removal of overburden particularly at turbine and borrow pit locations. The groundwater vulnerability underlying the wind farm site and the majority of the grid connection route is classified as ranging from 'High' to 'Extreme' with areas of exposed bedrock also present. It is proposed to remove the overlying soft ground and Glacial Till deposits and the vulnerability of the aquifer to groundwater pollution will increase as this overburden is removed thus reducing the level of protection. Potential for silt infiltration to groundwater as a result of increased surface runoff and reduced protection of the aquifer. Soil erosion as a result of exposure of soils in open excavations and temporary storage of excavated materials represents a potential impact to the underlying groundwater aquifer. The EIAR also states that the effect on groundwater will be negligible based on the depth of excavation required for the turbines and any dewatering required will be pumped and the effect will be localised to turbine locations. The magnitude of potential impacts is stated to be of moderate significance.

	Borrow Pits: Potential for groundwater pollution from the removal of overburden. The underlying groundwater vulnerability is classified as ranging from 'High' to 'Extreme' with areas of exposed bedrock also present. Aquifer vulnerability to groundwater pollution will be increased as overburden is removed thus reducing the level of protection. Potential for silt infiltration to groundwater as a result of increased surface runoff and reduced protection of the aquifer. Soil erosion as a result of exposure of soils in open excavations and temporary storage of excavated materials represents a potential impact to the underlying groundwater aquifer. The extraction of rock will represent a reduction in the availability of an exhaustible resource. The crushed rock potential across the site is classified as 'very low' to 'moderate', indicating that the bedrock in the area is not considered to be of high quality, and is not readily available due to the lack of bedrock exposures at the surface. The magnitude of these potential impacts, prior to mitigation, is considered to be of moderate significance.
	• Slope Instability: Slope failure has potential to impact the existing geological conditions from the removal and deposition of material and the exposure of underlying overburden deposits and bedrock to an increase in surface water runoff and subsequent increase in erosion. Potential to have an impact on the safety of construction/forestry workers in the vicinity of a landslide/slope failure event, existing infrastructure (roads, access tracks), streams and rivers, dwellings, the public, livestock and wildlife and areas designated for environmental protection. Could potentially result in the influx of acidic waters into downgradient surface water features resulting in a decrease in the receiving water's pH values and cause an inflow of silt into nearby watercourses and may impact groundwater quality in the underlying aquifer (LI) and in any groundwater abstractions in the vicinity of a landslide event. The magnitude of potential impacts is stated to be of negligible significance.
	• Internal Cabling and Grid Connection: Associated excavations and ducting may present a preferential pathway for the movement of groundwater and/or contamination in the subsurface. Excavations for the grid trenches have a direct impact on the exposed soils and rock through increased erosion from surface water ingress. Given that the open sections of the trench will be backfilled following the installation of each section of ducting the magnitude of these potential impacts, prior to mitigation, is of slight significance.
	• Horizontal Directional Drilling (HDD): Potential for contamination to groundwater from spills/leakages. The use of construction plant and associated refuelling and storage of fuels and hydrocarbons with potential for spills or leaks could result in contamination of the underlying aquifers. Potential for overburden collapse at the proposed HDD locations at water crossings during the advancement of the HDD bore. The magnitude of these potential impacts is considered to be of moderate significance.
	• Turbine Delivery Route (TDR): Accommodation works associated with the TDR route will include minor excavations of existing overburden deposits. The potential impact would be from the exposure of the over burden and underlying bedrock to erosion via surface water ingress during the works. Given the limited extent of associated excavations, the magnitude of these potential impacts, is considered to be of slight significance.
	• Overall, the potential direct impacts is considered to be a short-term, negative impact of slight to moderate significance. Indirect impacts, arising from demand on local aggregate extraction facilities and at the borrow pits, are considered to be of slight significance.
Operation	• Some construction traffic may be necessary for maintenance of turbines, hardstands and access tracks which could result in minor accidental leaks or spills of fuel/oil which is a potential risk to groundwater.

	• The grid transformer in the substation and transformers in each turbine are oil cooled. There is potential for spills / leaks of oils/battery fluids from this equipment resulting in contamination of soils and groundwater.
	• A small amount of granular material may be required to maintain access tracks during operation which will place intermittent minor demand on local quarries.
Decommissioning	• The potential impacts associated with decommissioning will be similar to those associated with construction but of reduced magnitude.
Cumulative	• Not anticipated to contribute to any significant, negative cumulative effects of other existing or known developments in the vicinity.

Table GH1: Summary of Potential Effects

Mitigation

- 10.8.112. The proposed mitigation measures include mitigation by design and best practice, including site investigations, shear vane testing, slope stability assessment and the positioning of turbines and other infrastructure in areas of commercial forestry where the soils are worked and drained and in areas of thinner peat/soft ground. It is stated that all works will be subject to design risk assessment and detailed method statements, with supervision by suitably qualified geotechnical personnel.
- 10.8.113. I note that the average shear strength at all turbine locations is stated as 41kPa³⁷, whereas the EIAR suggests that the undrained strength at Derrybrien (Co. Galway), was c. 2.5kPa and therefore the undrained strength at the proposed site is significantly greater with no close correlation to the peat conditions and less likelihood of failure.
- 10.8.114. Other mitigation measures during the construction phase include compliance with a CEMP, a copy of which is included in Appendix 3.1 of the EIAR. The measures include: surface water management; fuel/oil storage and spill protection measures; refuelling protocols; retention of excavated overburden on-site for use in landscaping and reinstatement; use of site-won material for general fill; marking-out of works corridors to minimise soil compaction; backfilling of excavations at soon as possible and avoidance of excavations/earthworks during heavy rainfall events; maintenance of existing forestry drainage outside the site areas; provision of new drainage and settlement ponds; silt fencing; monitoring of water quality during construction; provision of drainage in advance of excavations; draining of surface water away from peat deposits; a landslide/slope failure emergency plan; groundwater monitoring;

³⁷ 10 to 62kPa across the whole site, with an average value of c. 25kPa.

provision of alternative water supply in event wells are impacted; installation of clay plugs at intervals to prevent cable trenches becoming preferential waterflow pathways.

- 10.8.115. In the operational phase no significant impacts are anticipated on the geological and hydrogeological regimes, however the EIAR notes the residual risk to groundwater.
- 10.8.116. Measures during decommissioning will be similar to the construction phase, although it is noted that some impacts will be avoided by leaving some sub-surface elements in place (turbine bases etc.). No mitigation measures are considered necessary to address cumulative impacts, given the lack of potential significant impacts identified.

Residual Effects

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

Assessment of Direct and Indirect Significant Effects

- 10.8.118. I have examined, analysed and evaluated Chapter 9 of the EIAR, all of the associated documentation and submissions on file in respect of geology and hydrogeology. The primary concerns relate peat slippage and pollution of the aquifer and private wells.
- 10.8.119. As alluded to in section 10.7 above, I also have concerns regarding the impact on the hydrogeological environment and associated reliant habitat as a result of dewatering. *Land Slippage and Slope Stability*
- 10.8.120. Having reviewed the information submitted by the applicant, including the geotechnical investigation reports, and having inspected the site, it appears that there are variable extents and depths of peat present within the wind farm site albeit mostly limited to the northern area, which is primarily in commercial forestry use, with associated drainage in place. Where it does occur in the southern area, it is in the form of a peaty topsoil.
- 10.8.121. Given the lack of significant peat deposits in the southern area, I do not consider it likely to be at significant risk of major peat slippage or bog slides as has occurred at other wind farm sites referenced by the observers. I do however have some concerns regarding the efficacy of some of the information presented in the EIAR. Setting aside any references to turbine "T21", including the obvious error in Table 9-9 and the numbering and layouts utilised in the trial pit information set out in Appendix 9.2, where

turbines T14 to T21 represent T13 to T20 of the proposed development, the information presented is evidently impacted by the weather conditions at the time.

- 10.8.122. The site investigations were carried out between 8th March and 14th May 2021 which was an untypically dry and sunny period, with below average rainfall and above average sunshine³⁸. This is illustrated in the trial pit photos in Appendix 9.2 of the EIAR but it does not reflect the heavy conditions I encountered at T3 and T13, and close to T17, where one would reasonably have expected it to be drier underfoot.
- 10.8.123. Whilst I do not dispute the findings in terms of water ingress, shear vane testing and overall peat stability as set out in Appendix 9.1 of the EIAR, where each turbine location in undrained conditions exceeds the FoS of 1.3, they must be treated with a degree of caution, particularly given the slope angles at the locus of proposed turbines T3, T13 and T17, ranging from 12° to 14°. This is reflected in the GSI map (Figure 9.1) where pockets of high susceptibility persist, and around T13 and T17 in particular.
- 10.8.124. The EIAR states that the proposed turbines will have foundation depths of 3m and ground investigations encountered a suitable bearing stratum within 3mBGL, so the turbine foundation can be finished at or near existing levels. In this regard, I note that gravity foundations are indicated in Table 9-1 of Appendix 9.1, but this is qualified and subject to further ground investigations prior to construction. Moreover, the NIS states that turbine foundations require a depth of 4m and therefore it is unclear whether all turbine bases will be situated directly on bedrock into which any vibrations would be transmitted. Having regard to the nature of these construction characteristics, I accept the low frequency vibrations from the wind turbines are not likely to result in increased slope instability but this is unclear in the case of T3, T13 and 17, given the topography.
- 10.8.125. I refer the Board to Plate 14-43 of Appendix 14.2 for a representative example of a turf-cutting section in the vicinity of turbine T13. In my opinion, it is not prudent to rely on further ground investigations prior to works given the variability of peat depth/slope.
- 10.8.126. The presence of slopes of soil and peat overlying bedrock will always give rise to the potential for localised failures, particularly, as the applicant notes, after heavy rainfall events and therefore I share the observers concerns, with specific regard to turbines T3, T13 and T17. However, the proposed mitigation, as outlined above, includes both

³⁸ Met Éireann, 2021. Spring 2021 (March, April, May). [Online] Available at

https://www.met.ie/cms/assets/uploads/2021/06/spring21sum.pdf [accessed 15th Oct. 2024]

mitigation by design and implementation of a CEMP to include measures such as avoidance of excavations/earthworks during heavy rainfall events, backfilling of excavations as soon as possible etc. Subject to compliance with the CEMP and implementation of the identified mitigation measures (including design measures), I am satisfied that the proposed development is not likely to result in a significantly increased risk of landslides or slope instability for the majority of the proposed turbines.

Impacts on Wells

- 10.8.127. The EIAR identified 6 no. groundwater wells within 1km of the site. This figure is based on a review of the GSI wells and springs database, and the applicant acknowledges that there are likely to be other wells in addition to those identified and therefore makes the assumption that all houses within 1km of the site boundary have a private well.
- 10.8.128. As noted in section 9.4 above, Cork County Council have not raised any concerns subject to the mitigation measures devised to protect groundwater during construction.
- 10.8.129. The EIAR identifies potential impacts on groundwater and wells as a result of reduction in groundwater levels from dewatering of excavations and groundwater pollution due to the removal of overburden, and the potential for contamination during construction works from spills or leakages or from silt infiltration associated with soil erosion etc.
- 10.8.130. The proposed wind turbines will be located a minimum of 750m from any houses with potential domestic wells. Given this considerable separation distance and the relatively shallow and short-term nature of the excavations and associated dewatering required for the turbine bases, there is no reason to believe that there will be a significant impact on groundwater levels. Once the turbine bases have been completed and backfilled, there will be no further pumping and groundwater levels will revert to current levels.
- 10.8.131. Other excavations, such as those proposed for the substation, cable routes and grid connection will be relatively minor and will be open for relatively short periods.
- 10.8.132. As the majority of turbine bases will be located directly on bedrock, including turbine T6, which is mostly glacial till (from 0.3-3m), and given the significant distance from existing wells and in the absence of a specific distance to John O'Sullivan's spring, it is not likely, in my opinion, that any vibration associated with the construction or operation of the wind turbines would be of a magnitude to result in well contamination.

- 10.8.133. The observers have not provided any technical evidence in support of their position, and I note that the mitigation measures include for the provision of alternative water supply in the event that wells are impacted upon. This is a reasonable approach.
- 10.8.134. I also note that the Council have confirmed that the Ballinagree Public Water Supply is from a groundwater abstraction located more than 1km from the nearest turbine. I agree that this is significantly separated from the proposal and will not be at any risk.

Localised Dewatering

- 10.8.135. Whilst I have no concerns regarding the impact on groundwater wells or the underlying aquifer as a result of dewatering, I do have concerns regarding the localised impact of dewatering in the vicinity of turbines T2, T3, T13 and T17 as detailed in section 10.7.
- 10.8.136. Whilst my concerns regarding turbine T2 are less acute given its relatively shallow slope (4^o) and could, as noted, be resolved through further micro-siting, but localised dewatering at T3, T13 and T17 could have a cascading impact on surrounding habitat.
- 10.8.137. As noted, this has been considered and concluded upon under the 'biodiversity' topic but is mentioned here given the zone of influence for Ground Water Dependent Terrestrial Ecosystems (GWDTE) i.e., 250m buffer for excavations deeper than 1m and the obvious anomalies in relation to the stated excavation depths i.e., 3m or 4m.

Conclusion on Land, Soils, Geology and Hydrogeology

- 10.8.138. I have considered all of the written submissions made in relation to land and soil and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on land and soil can be avoided, managed and/or mitigated for the majority of the proposed development by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I do however have residual concerns regarding slope stability and dewatering in the vicinity of turbines T3, T13 and T17 given the immediate topography.
- 10.8.139. Overall, I am satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on land and soil subject to the omission of turbines T3, T13 and T17 which are located on steeply sloping ground within a zone of influence for GWDTE including Northern Atlantic wet heaths (4010).
- 10.8.140. I recommend that the Board consider the omission of T3, T13 and T17 in the event of a grant of permission given the potential impacts on groundwater and slope stability.

Water and Hydrology

Issues Raised

- 10.8.141. As noted above, the observers raised concerns in relation to groundwater contamination which could impact on water flow and the maintenance of hydrological regimes. This is mainly a hydrogeological issue, however, and has been addressed but there is an obvious inter-relationship between it, surface water and biodiversity.
- 10.8.142. In this regard, the observers raise concerns about sediment run-off to the Blackwater River which could affect freshwater pearl mussel habitat. This has also been addressed in section 10.7 above and in section 11 below in the context of the SAC.
- 10.8.143. I also refer back to the DHLGH-DAU comments at scoping stage where they raised similar concerns regarding soil slippage, siltation or increase in contribution to hydrographic peaks in the downstream watercourses that contribute to the SAC. In this regard, they noted that on-site surveillance, downstream monitoring and regular reporting will be required to ensure that proposed control measures work in practice.
- 10.8.144. The OPW raised some initial concerns in relation to *inter alia* the design standard for the bridges/culverts; flooding, including swale capacity, flow estimations; and the general accuracy of information contained in the EIAR. They have not, however, raised any additional concerns following the applicant's further information response.
- 10.8.145. The local authority's Environment Section had no objection subject to conditions.

Examination, Analysis and Evaluation

- 10.8.146. Chapter 10 of the EIAR deals with hydrology and water quality. It is supported by:
 - Appendix 10.1 and 10.2,
 - Figures 10-1 to 10-5,
 - Tables 10-1 to 10-11, and
 - the further information response (Section 3.3.1 and Appendix 5).
- 10.8.147. I have examined this chapter and the supporting documents. It provides details on the existing hydrology and water quality in the receiving environment including receiving waterbodies and catchments. It also includes information on any historical flooding within the site, internal site drainage and grid connection watercourse crossings.

- 10.8.148. The assessment methodology includes a desk study, field assessment and water sampling to establish drainage patterns, hydrological environment and water quality.
- 10.8.149. A flood risk assessment (FRA) is set out in section 10.5 of the EIAR. It is based on comparing volumes generated due to changes in surface and potential storage volume in swales constructed as part of a drainage system. It states that 5,221cu.m would be generated and 25.5km of swales, with a storage capacity of 6,740cu.m, would be constructed and therefore no negative impact on flooding risk arises in this area.
- 10.8.150. I also note that a Site-Specific Flood Risk Assessment (SSFRA) (Fehily Timoney, January 2024) is included in the further information response to the issues raised by the OPW (Appendix 5). It confirms the FRA conclusion in respect of flood risk.
- 10.8.151. Section 10.6 of the EIAR sets out the proposed drainage design for the site based on the potential impacts and having regard to the flood risk assessment. It notes that drainage design is the primary mitigation for the protection of waterbodies, incorporating silt protection and measures to reduce the rate of surface water runoff.

Baseline

- 10.8.152. The wind farm site is primarily situated within the Sullane_SC_020 (19_7), Blackwater (Munster)_SC_050 (18_4), and Blackwater (Munster)_SC_070 (18_7) sub-catchments and more particularly is spread across 8 no. sub-basins. Turbines T1, T2, T3, T6, T7, T8, T9, T10, T11, T12, T13, T16 and T17 are within Laney_010 sub-basin. Turbines T4 and T5 are within Laney_020 sub-basin. Turbines T14, T15 and T18 are within Nad_010 and Turbines T19 and T20 are within Glen (Banteer)_010 sub-basin.
- 10.8.153. Surface runoff from turbines T19 and T20 drains into the Glen (Banteer) Stream which forms part of Blackwater River SAC c. 4.7km northeast of the site, as does the adjacent Nadanuller Beg Stream to the northwest which runs roughly parallel. It receives surface runoff from the wind farm site from unnamed streams on the northern slope of Seefin ridge and c. 350m north of turbine T14 and between 330-640m of turbine T18.
- 10.8.154. But overall, the main hydrology feature within the wind farm site is the Laney River. All surface runoff within the Laney_010 sub-basin drains to the River Laney or its tributaries. The River Laney runs in northwest-southeast direction. The following tributaries of the River Laney are stated as receiving receptors of the wind farm site:

- West Ballynagree Stream,
- Knocknagappul Stream,
- Carrigagulla,
- Unnamed Stream and its tributary located c. 700m southwest of turbine T13,
- Ballynagree East Stream, and
- Unnamed streams east of the borrow pits located at the western side of Laney_010
- 10.8.155. The EIAR states that all turbines have been located at least 75m from any open waterbody and it notes an error in the OPW mapping database regarding the proximity of turbine T2 (within 75m) to the Knocknagappul Stream following a site inspection. Based on my own inspection, I can confirm that this stream does not flow as mapped.
- 10.8.156. There is no record of historical flooding at the wind farm site or within a 2km buffer other than a recurring flood incident recorded as "Annagannihy North to Musheera Co. Cork Recurring" at an unnamed stream along Butter Road c. 650m northeast of T10. Similarly, there are no recorded historical flood incidents within a 2km buffer zone of the BEMP lands other than a recurring incident recorded as "Delehinagh River Coakley's Bridge Recurring" located 1.65km downstream of BEMP lands (J. Barrett).
- 10.8.157. There are no historical flood incidents along the grid connection or within 2km buffer zone. There are a number of historical incidents and recurring events along the TDR.
- 10.8.158. The SSFRA, submitted at further information stage, states that according to National Indicative Fluvial Mapping (NIFM), the site is within Flood Zone B, and the only elements of infrastructure located within this zone based on County Development Plan flood mapping are the proposed clear span bridge crossing WF-HF4 and a short section of internal access track (c. 25 m either side of the proposed bridge crossing).
- 10.8.159. WFD water quality status and waterbody risk for the wind farm is classified as 'High' and 'Not at Risk'. The same is outlined for the grid connection with the exception of the 'Bealick' and 'Awboy' watercourses where the status and risk drops to 'Good' and 'At Risk' respectively. Q-value biological water quality rating in the area is 'unpolluted'.
- 10.8.160. Surface water quality sampling was undertaken at 10 no. locations as part of the aquatic ecological assessment as noted in section 10.7 above. Exceedances for total ammonia and molybdate reactive phosphate (MRP) were observed at sampling site

A1. An exceedance for total oxidised nitrogen (TON) was observed at sampling site B10 and exceedances for MRP and TON were observed at sampling site C17. The EIAR also notes that B10 and C17 fell outside acceptable parameters for nitrate.

- 10.8.161. With regard to environmentally designated areas, it is noted that a small portion of the wind farm site is situated within Boggeragh Mountains NHA (0.36sq.km or 0.02%). Additionally, surface water running off the northern part of the wind farm site (1.5sq.km or 7.7%), including the waterbodies draining turbine T14, T15, and T18-T20, drains into the Blackwater River SAC. There is no run-off to the closer Musheramore SPA.
- 10.8.162. As noted, the northern part of the site drains into the Nadanuller Beg Stream and its tributaries, save for turbines T19 and T20 which drain towards the Glen (Banteer) Stream. There is an existing road at the northern part of site. It is drained by a road drain with cross drains installed at the lowest points along the road. Greenfield runoff from the southern extent of the wind farm site drains to the Laney River and its tributaries. Two ford crossings were identified over the Laney River and Unnamed tributary of the Laney River. These crossing points are named WF-HF9 and WF-HF16.
- 10.8.163. Existing tracks are present throughout the site. Some of these tracks are access tracks for the forestry inspection and tree felling which are c. 5m in width. The majority of the access tracks are made up of sandstone/siltstone hardcore. The existing track drainage consists of 'over the edge' drainage to roadside drains. It is proposed to utilise the existing tracks in so far as possible to access the new turbines. The existing tracks will require strengthening and widening to achieve a track width of 5m except for the section of road in the NHA. A total of 13 no. crossing points were identified.
- 10.8.164. The proposed grid connection route is within 4 no. WFD sub-basins. There are no historical or recurring flood incidents along this route. It is noted that there will be a maximum of 13 no. watercourse crossings. For structures with insufficient cover level, ducts will be installed under the structure with horizontal directional drilling (HDD) employed at 3 no. locations, namely GCR-WCC7, GCR-WCC8 and GCR-WCC9.
- 10.8.165. Similarly, with regard to the TDR, there are a total of 80 no. watercourse crossings from Foynes to the site, none of which will be modified save for minor works e.g., temporary load bearing surfaces etc. The EIAR notes that the most significant temporary accommodation will be required at TDR-POI-36 and TDR-POI-44 where the change of surfaces is proposed. At TDR-POI-36 a temporary aggregate hardstand
and access track will be constructed and at TDR-POI-44 ground reprofiling will be undertaken 30m from the River Owenbaun (Rathcool) which forms Blackwater River SAC. These works have been fully considered in section 10.7 and the section 11 (AA).

10.8.166. Finally, I note that the BEMP lands, consisting of 3 no. wildlife corridors and 6 no. land parcels, are located within 3 no. sub-catchments, the Blackwater (Munster)_SC_070; Sullane_SC_020; and Lee (Cork)_SC_040. The wildlife corridors to the north follow similar drainage patterns to the northernmost reaches of the site whereas the wildlife corridor large parcel of BEMP lands immediately west of the site follows the main drainage pattern to the south of the site via the Laney River. The remaining BEMP land parcels to the southeast drain towards the Glashagarriff and Delehinagh rivers.

Potential Effects

10.8.167. Potential effects, as identified in the EIAR, are summarised in Table GH2 below.

Project Phase	Potential Effects
Do Nothing	• Forestry would persist as the predominant land use and whilst surface water drainage and infiltration to ground will continue with no impact on either surface or groundwater, agricultural and afforestation pressures would continue to pose a threat to water quality within the wider catchment.
Construction	• Surface Runoff: Potential to contribute to the increase in runoff due to changes in the finished surfaces i.e., new/upgraded access tracks, turbine hardstanding, on-site substation, temporary compounds etc. The estimated increase in the unmitigated peak runoff due to the wind farm is 0.483cu.m/s (or 0.16 %) for a 1 in 100 years storm event, which includes a 20% rainfall adjustment for climate change. The EIAR describes the impact as direct, negative but not significant on receiving waters as the increase in peak runoff is low compared to the flows of receiving waters.
	• Suspended Solids: Potential sources of sediment laden water include standing water in excavations, mismanagement of excavations/excavated material, during the construction of new watercourse crossings points, roadside drain blockages, surface water inflows and groundwater seepages etc. This can result in the release of suspended solids, resulting in increased turbidity which in turn could affect the water quality, fish stocks and other species sensitive to fine sediment e.g., the freshwater pearl mussel. The EIAR describes the impact as direct, negative and significant.
	• Release of Hydrocarbons: Potential sources include refuelling activities, and general spills and leaks. The EIAR describes the impact as direct, negative and slight due to the low likelihood and low quantities involved.
	• Contamination from Wastewater: Sanitary waste could lead to contamination of receiving waters. The EIAR describes the impact as indirect, negative and not significant as it is highly unlikely that sanitary waste could be released into the environment due to proposed location and management of welfare facilities during the construction stage.
	Release of Cement-Based Products: Such products will be used in turbine foundations and will also be used for construction of bridge abutments at crossing WF-HF4. I note that precast concrete structures (box culverts) will

	be used for new watercourse crossings WF-HF5, WF-HF6 and WF-HF9. Entry of such products into the site drainage system, into surface water runoff, and hence to surface watercourses or directly into watercourses represents a risk to the aquatic environment. The EIAR describes the impact as indirect, negative and moderate because it is unlikely that a huge could be released into the environment. This will have a negative impact on water quality of the receiving watercourses, including the Blackwater River SAC.
	• Tree Felling: Potential impacts from release of sediments and nutrients in watercourses due to exposure of soil and subsoil following vehicle tracking, skidding and extraction methods and release of nutrients in watercourses from the brash if not managed correctly during felling i.e., left in riparian buffer zones. The EIAR describes the impact of nutrients as indirect, negative and moderate because of high likelihood and short-term period effect. Tree felling activities will have a negative impact on water quality of the receiving watercourses which includes the Blackwater River SAC.
	• BEMP Lands: Potential impacts associated with the BEMP comes from tree felling, and watercourse and livestock management activities. As considered above, the impact of nutrients is indirect, negative and moderate because of high likelihood and short-term period effect. Blocking extant land drains (in accordance with the advice of the project ecologist) will have a direct, neutral and imperceptible impact on hydrology and water quality, because the catchment area of these drains is small compared to the catchment area of the sub-catchments. Livestock will be prevented from accessing natural watercourses by stock proof fencing and this will have an indirect, positive and slight impact on water quality of the local watercourses because local siltation and bank erosion will be prevented.
	• Grid Connection: Potential impacts relate to the release of suspended solids and hydrocarbons e.g., mobilisation of excavated soil, refuelling activities etc. The EIAR describes the impact from the release of suspended solids as direct, negative and slight as the excavation area open at any one time is small (50m trench) and therefore only small quantities can release to receiving waters. Similarly, the impact from hydrocarbons is direct, negative and slight as the low likelihood and low quantities involved. There is no hydrological connectivity between the grid connection and Blackwater River (Cork/Waterford) SAC.
	• TDR-POI-36: Includes a 200m by 50m area of temporary hardstanding. The estimated increase in runoff due to the hardstanding is negligible and it will be constructed from permeable material allowing surface water to infiltrate to the soil below. The nearest watercourse, Drishane More Stream, is located c. 320m from the hardstanding. and there are no open drains to act as a conduit. There is potential for oil leakages however the EIAR describes this impact as direct, negative and not significant as the quantities of oil would be low, and the distance to the closest waterbody.
	• TDR-POI-44: Includes ground reprofiling and a load bearing surface. Inappropriate management of excavated material could release suspended solids into the River Owenbaun (Rathcool) which is within 30m and forms Blackwater River SAC. The impact is described as direct, negative and slight as small quantities of suspended solids could be transported to the river during high rainfall events. Potential impact from oil leakages is described as direct, negative and not significant due to the low likelihood and low quantities involved.
Operation	• Negligible risk of sediment release to the watercourses due to the grassing over of the drainage swales and revegetation of other exposed surfaces.
	• Drainage used during construction will be used during the operational phase, except for the settlement ponds which will be filled on completion.

	• Potential for oil spillages used in cooling the transformers associated with the facility. Spills of any oil or fuels (hydrocarbons) from site vehicles onto access tracks may leach to adjacent watercourses. However, this is unlikely to be a significant impact given the low volumes of operational traffic.
	• It is not anticipated that the operational phase will involve significant impacts on the water quality of the receiving watercourses, including the Blackwater River SAC.
Decommissioning	• Potential impacts will be similar to the construction phase but to a lesser degree as the drainage swales would be fully mature and would provide additional filtration of runoff.
	• Access tracks and turbine foundations will be left in place. Access tracks will continue to be used for recreation, forestry and agriculture. Turbine hardstanding will be covered over with topsoil and left to revegetate.
	The recreational trails and associated signage shall be left in situ.
	• The temporary accommodation works along the TDR will not be required as turbine components can be dismantled on site and removed using HGVs.
	• Grid connection infrastructure including the on-site substation and ancillary electrical equipment shall form part of the national grid and will be left in situ.
	 No decommissioning activities are envisaged for the BEMP lands.
Cumulative	• Potential cumulative impacts are considered with respect to major developments that are hydrologically link i.e., within the same sub-basin and within 10km of the wind farm site. These include various wind farms (Boggeragh 1 and 2, Esk, Carriganimmy, Bawnmore), substation extensions (Millstreet and Bawnmore), Knockglass Solar Farms, met masts, and commercial tree felling. No significant cumulative impacts on water quality and hydrology are identified.

 Table GH2:
 Summary of Potential Effects

Mitigation

10.8.168. As noted above, the proposed measures include mitigation by design, with an appropriate drainage design stated as being the primary measure. The drainage system design includes the provision of interceptor drains upslope of infrastructure with diffuse outfall on the downslope; retention of drainage systems for existing tracks and roads (with widening and new silt traps where necessary); provision of roadside swales and interceptor drains with silt traps, check dams, settlement ponds with overland diffuse outfalls, and silt fencing in strategic locations. It is stated that the site drainage measures will be put in place in parallel with or ahead of construction, with settlement ponds infilled at the end of the construction phase. Drain crossings will be piped with silt protection controls (SPCs) in place. Runoff from the roof of the on-site substation will be collected in a water harvesting tank, and wastewater will be drained to a tank and regularly emptied. The site compound will be surrounded by a shallow swale, with runoff passing through an oil interceptor prior to overland discharge. Site

services will comprise Portaloo and/or containerised units and bottled/tanker water. An interceptor drain discharging to a settlement pond will be installed for borrow pits.

- 10.8.169. Other mitigation measures during the construction phase are outlined in Section 10.7 of the EIAR, and generally comprise good practice measures such as 50m buffer zones from streams, water quality monitoring, appointment of an Environmental Clerk of Works (ECoW), erosion control measures, refuelling protocols, washing of concrete truck chutes, no batching of concrete or wet cement within the wind farm site, use of weather forecasting prior to concrete pours, provision of spill kits, and compliance with the CEMP³⁹, which is included as Appendix 3.1 of the EIAR. Regarding monitoring, it is proposed to take weekly water samples during the ground disturbance works.
- 10.8.170. I note some specific measure in relation to the existing forestry track between turbines T18 and T20, which is a floating road and where it is proposed to install swales and interceptor drains on either side. I also note that the southern compound (north of T12) will be downsized and used as a gravel surfaced car park for the recreational trails during operational phase. It is proposed to construct a french-drain around the footprint of the car park with a diffuse outfall at the downslope side of the car park.
- 10.8.171. Other specific measures are proposed for the tree felling operation, prior to the construction of the wind farm access tracks and hardstanding. These primarily comprise enhanced SPCs and measures to prevent soil erosion and nutrient runoff.
- 10.8.172. Similar specific measures are proposed for the grid connection, which includes HDD at 3 no. locations, and the TDR. These primarily relate to the control of suspended solids and hydrocarbons and comprise good practice measures as noted above.
- 10.8.173. In the operational phase, the main hydrological impact is the increase in run-off which will be mitigated by the drainage system, which will increase time of concentration and decrease peak run-off. Mitigation during maintenance operations will include provision of spill kits, restrictions on refuelling locations, bunding of transformers. The maintenance regime will include inspection of the drainage system, removal of blockages post-storm event etc. No mitigation measures are proposed to address flood risk, as it is contended that the proposal will have a minimal impact on flood risk.

³⁹ Incorporating the Surface Water Management Plan (SWMP) – Appendix 10.2 (as per section 4.3.5).

10.8.174. Mitigation measures during decommissioning will be similar to the construction phase, although of reduced magnitude, as some elements will be left in place (tracks etc.).

Residual Impacts

10.8.175. Following implementation of the mitigation measures, no significant residual impacts on the water environment are anticipated as a result of the construction, operation and decommissioning phases nor will there be any impact on the Blackwater River SAC.

Assessment of Direct and Indirect Significant Effects

Water Quality

- 10.8.176. I consider that the greatest potential for significant impacts on the water environment arises from the potential for suspended solids, pollutants, oils, cement, chemicals etc. to be released into watercourses or groundwater during the construction phase.
- 10.8.177. This issue was raised in observations, albeit specific to groundwater and well pollution, and in relation to contamination of freshwater pearl mussel habitat. As noted above, the observers have not provided any technical evidence in support of their position.
- 10.8.178. The EIAR and associated CEMP set out a range of mitigation measures and pollution prevention measures, as outlined above. The measures include both mitigation by design and other mitigation including provision of roadside swales with silt traps, check dams, settlement ponds with overland diffuse outfalls and silt fencing. Runoff from the on-site substation roof will be collected in a water harvesting tank, and wastewater will be drained to a holding tank and regularly emptied. The site compound will be surrounded by a swale with runoff passing through an oil interceptor prior to overland discharge. Other mitigation generally comprises good practice measures such as 50m buffer zones from streams, water quality monitoring, erosion control measures, refuelling protocols, provision of spill kits and compliance with the CEMP. With particular regard to cement/concrete, I note that no batching of wet products is proposed on-site and the applicant commits to pouring concrete during dry conditions.
- 10.8.179. I note that CEMP (via the SWMP, Appendix 10.2) also sets out emergency response measures to deal with any silt control and spillages and that it is proposed to appoint an Environmental Clerk of Works (ECoW) to manage implementation of the CEMP.
- 10.8.180. I also note whilst IFI stated that the proposed wind farm poses significant risk of negative impact on fisheries during elements of the construction phase, including site

clearance, construction and upgrading of access roads and crossings and the installation of the grid cable, they did not request further information or recommend a refusal. They did, however, request that their suggested conditions be attached. These include *inter alia* compliance with IFI *'Guidelines on protection of fisheries during construction works in and adjacent to waters'*. This is considered reasonable.

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

Water Quality Monitoring

- 10.8.182. Allied to the issue of water quality, is a programme for monitoring. Whilst this was not raised specifically by the observers, it was raised by the DHLGH-DAU during scoping stage, where they noted that on-site surveillance, downstream monitoring and regular reporting will be required to ensure that the proposed environmental measures work.
- 10.8.183. With regard to the water quality monitoring programme, an ECoW will be on-site during construction. They will be responsible baseline sampling prior to construction using turbidity meters upstream and downstream of the site. A daily visual check of watercourses turbidity will also be carried out during construction. Should turbidity levels be higher than the pre-construction or daily inspections show high level of turbidity, construction will be stopped, and remediation measures will be put in place.
- 10.8.184. I also note that water samples will be taken weekly during ground disturbance works, and within specified parameters i.e., pH, BOD etc. but this is not reflected in the corresponding section of the CEMP. This should be addressed by planning condition.
- 10.8.185. Outside of the monitoring programme, it is also proposed to undertake weekly visual inspections of the silt-traps, silt fencing and swales and a daily visual inspection of the settlement ponds. Additional monitoring is also proposed following periods of heavy precipitation to ensure attenuation and silt arrest measures remain effective.
- 10.8.186. I consider these measures adequately address any concerns espoused by the DHLGH-DAU during scoping, and, by extension, the observers in respect of downstream impacts on the freshwater pearl mussel habitat. Should the Board be

minded to grant permission, I recommend that the applicant be required to incorporate the monitoring programme, including weekly water sampling, into the CEMP.

Increased Run-off and Flooding

- 10.8.187. As noted, the OPW sought further information in respect of a number of issues including flooding, flow estimations and swale capacity. The Board should note that the OPW did not dispute any of the details outlined in the further information response.
- 10.8.188. The proposed drainage design is based upon the retention and dispersal of surface run-off, rather than via concentrated point discharges to watercourses. It is intended to achieve this via swales, settlement ponds and a number of diffuse outfalls. I consider that this approach will be beneficial in terms of reducing flood risk and spreading the increased runoff over a larger receiving environment. It is notable in this regard that, due to the large size of the site, surface water runoff will drain to eight sub-basins. Table 10-10 of the EIAR sets out the runoff to each sub-basin and indicates that the increase in runoff for a 1 in 100-year storm event to each of the subbasins will be minimal, with an overall increase in peak runoff of 0.483cu.m/s. The total capacity of the proposed swales is 6,740cu.m, which is substantially greater than the 5,221cu.m of approximate additional runoff during a 6-hour storm event. I note this capacity was revised upwards to 6,918cu.m at further information stage with swale depth lowered from 0.3m (Section 10.5.3 of the EIAR) to a depth of 0.5m (Section 3.3.1.1.2 of RFI). I am satisfied that it takes into account the fact that the swales will often have gradients with check dams, where immediately downstream, there will be little, or no water depth stored. I note that this was a specific concern of the OPW.
- 10.8.189. Having regard to the flood maps contained within the County Development Plan, which are derived from the OPW's NIFM⁴⁰, parts of the application site (red line) boundary intersects with Flood Zones A and B, along a very limited stretch of the River Laney.
- 10.8.190. I am satisfied that the proposed substation is outside these stated flood zones and therefore is within Flood Zone C. I therefore agree with the applicant that the only infrastructure within the indicative flood zones is the clear span bridge crossing (WF-HF4) and c. 25m of internal access track either side of the bridge crossing. Whilst it could be argued that the bridge and approaches within Flood Zone A (as it crosses

⁴⁰ OPW. *Flood Maps.* [Online] Available at https://www.floodinfo.ie/map/floodmaps/ [accessed 20th Oct. 24]

the Laney River) by their nature are 'water-compatible development' that does not require a Justification Test, the applicant has provided one in response, nonetheless.

- 10.8.191. In this regard, I do note their suggestion that the bridge is considered as 'less vulnerable development' as defined under 'local transport infrastructure', and therefore 'appropriate' in Flood Zone B. This does not, however, account for Flood Zone A.
- 10.8.192. I have reviewed the Justification Test as detailed in the SSFRA. The model not only includes a comparison between the existing and proposed scenarios at bridge crossing point WF-HF4, the only infrastructure within the flood zones, it also includes culvert WF-HF6 and bridges WF-HF8 and WF-HF9, and incorporates flow values corresponding to 1% and 0.1% AEP events, plus 20% to account for climate change.
- 10.8.193. In this regard, whilst I note that the OPW initially considered that flow estimation at crossings were unsuitable, their further information response clarifies that the same confidence level is not required for estimations used for FRA and Section 50 purposes.
- 10.8.194. Appendix 5 of the further information response details the hydraulic analysis data.
- 10.8.195. I note that the hydraulic behaviour was simulated using the developed models, which provided water velocity and elevation values at various locations within the river and flood plains upstream and downstream of the existing and proposed crossings. Generally, there was 'no variation of water level' downstream of the crossing points.
- 10.8.196. Section 7 of the SSFRA indicates that sufficient span and height have been provided to the structures in order to reduce flow restrictions and notes that construction stage methodologies and mitigation measures to be adopted for the construction of proposed pre-cast concrete box culverts and clear span bridges are set out in the CEMP. It also notes that ongoing monitoring and maintenance of the culverts and bridges will be essential to ensure their continued effectiveness over time. A regular inspection/maintenance regime was also recommended by the OPW. Whilst I note that maintenance of the drainage system is outlined in Section 4.3 of the SWMP, and therefore included within any subsequent CEMP condition, the Board may wish to consider a specific drainage monitoring condition in the event of a grant of permission. Overall, I am satisfied that the proposed development meets the Justification Test.
- 10.8.197. I have also reviewed the contended error and contradictory information in the EIAR, according to the OPW, and the applicant's response to same. These issues are

generally of a minor nature, including typographical errors⁴¹, and do not fundamentally alter the conclusions in the EIAR which have since been proven in the SSFRA.

- 10.8.198. Other issues raised by the OPW in the context of Section 50 of the Arterial Drainage Act 1945, as amended, namely the design of crossings WF-HF5 and WF-HF8, have also been addressed by the applicant, and will be considered by the Commissioners, as noted above. I specifically note that the bed level of the watercourse at WF-HF5 does not require any alteration and in all cases, crossings are designed to convey 1% AEP event with 20% climate change allowance and a minimum 300mm freeboard.
- 10.8.199. Having regard to the proposed drainage design and the characteristics of the receiving environment, I am satisfied that the proposed development is not likely to result in a significant increase in surface water run-off or a significant increase in flood risk.

Conclusion on Water and Hydrology

10.8.200. I have considered all of the written submissions made in relation to water and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on water can be avoided, managed and/or mitigated by measures that form part of the proposal, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on water.

Overall Conclusion on Land, Soil, Water, Air and Climate

10.8.201. Having regard to the foregoing, I am satisfied that the potential for significant adverse impacts on land, soil, water, air and climate can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions, including those requiring the omission of turbines. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on land, soil, water, air and climate.

⁴¹ Tables 2-3 and 2-4 of the further information response replace Tables 10-7 and 10-11 of the EIAR. A revised Figure 10-5 is also included in the further information response.

10.9. Material Assets, Cultural Heritage and the Landscape

10.9.1. This section relates to chapters 11, 13, 14, 15 and 16 of the EIAR.

Material Assets

Issues Raised

- 10.9.2. A number of the observers have raised concerns regarding the impact of the proposal on local recreation and tourism, suggesting that the surrounding area is well used by hikers, walkers, cyclists etc. Concerns are also raised in relation to impacts on mobile phone and television reception in addition to waste generation on decommissioning.
- 10.9.3. As noted, Irish Water, now Uisce Éireann, have no objection subject to conditions.
- 10.9.4. Similarly, the Irish Aviation Authority (IAA) have no objection subject to conditions.
- 10.9.5. Whilst the local authority has not raised any concerns in relation to material assets, I do note the suggested bond (€300,000) to ensure the satisfactory reinstatement of any public roads that may be damaged by the development. I also acknowledge the subsequent Council debate in relation to amount of the road bond as per the Chief Executive's Report for the Council meeting. A special development contribution is also recommended. These issues are discussed under 'traffic and transportation' below.

Examination, Analysis and Evaluation

- 10.9.6. As noted, material assets is addressed in Chapter 11 of the EIAR while telecommunications and aviation are considered in Chapter 16. The main material assets identified in the EIAR as being subject to potential environmental impacts are: land use; recreation, amenity and tourism; and renewable, non-renewable resources and utility infrastructure and their baseline environment is summarised in section 10.6.
- 10.9.7. Chapter 16 is supported by:
 - Appendix 16-1 and 16-2,
 - Tables 16-1 and 16-2, and
 - the further information response (Section 3.6.1.4).
- 10.9.8. I have examined this chapter and the supporting documents. It considers the potential effects of the proposed development on local telecommunications and aviation.

- 10.9.9. The assessment methodology included desktop examination of telecoms and aviation infrastructure in the area and consultation with relevant stakeholders including all known telecoms operators and the IAA and review of the TDR for overhead lines etc.
- 10.9.10. The scoping and consultation exercise is set out in Table 16-2 of the EIAR. I note that a 'no impact' response is prevalent for the majority of telecoms operators however I also note that a number of operators did not respond including some TV broadcasters. The Broadcasting Authority of Ireland indicated that an impact was unlikely, however.

Baseline

- 10.9.11. As noted, the baseline environment for land use; recreation, amenity and tourism; and renewable, resources and utility infrastructure is summarised in section 10.6 above.
- 10.9.12. The EIAR also notes that the nearest operational airport to the main wind farm site is Cork Airport, which is c. 35km to the southeast. The nearest telecoms mast is located in the townland of Lacknahacknee, c. 3.2km southeast of the nearest turbine, T5. A radio link was also identified, and a corridor of 230m from the nearest turbine applied.

Potential Effects

10.9.13. Potential effects, as identified in the EIAR, are summarised in Table MA1 below. It includes those relating to land use, tourism and resources as outlined in Chapter 11.

Project Phase	Potential Effects
-	
Do Nothing	 The existing land use on the site will continue in its present form consisting of commercial forestry and agricultural land and opportunities, including additional recreational potential, would not be realised. There would be no change to the existing telecommunications, broadcasting and aviation operations in the area.
Construction	Land Use: The EIAR states that 10 no. turbines and 3 no. borrow pits are located in forested lands with 10 no. turbines on pasture lands. Existing access tracks will be utilised/upgraded with new tracks on forestry and farmland with temporary interruption to these lands. Felling of c. 88ha of commercial forestry is required within the wind farm site. Felling also required on the BEMP lands with a long-term moderate, negative impact but subject to proportionate replacement in line with Forest Service policy. No more than imperceptible indirect or in-combination effects associated with this replanting. Forestry activity will cease resulting in a short-term slight, negative impact to existing land use, however, activity in adjacent areas of forestry can continue. Access to Duhallow Way will be temporarily disrupted and public access under Coillte's open forestry policy will be temporarily closed, resulting in moderate short-term, negative impact to recreation land use in and around the wind farm site. Full road closures will be put in place to facilitate cabling works in combination with stop/go lane closures etc. along the grid route resulting in temporary slight, negative impact to residential and agricultural land use. TDR node upgrades has potential for slight, brief to temporary impacts to land use in addition to the supply of

	electricity and telecoms as a result of temporary removal of services. Works near Drishane Cemetery / hard surface staging area (TDR-POI-36) will have a temporary impact on agricultural lands. Turbine delivery is likely to have a temporary slight, negative impact on residential land-use due to noise nuisance as a result of machinery and the transportation of oversized loads.
	Recreation, Amenity and Tourism: Potential to cause impacts on features within the vicinity of the wind farm site e.g. Duhallow Way. Together with noise, traffic and dust, potential to cause nuisance and this is likely to have a short-term moderate, negative impact on amenity. Areas usually subject to Coillte's open forestry policy will be closed to the public, which is likely to have a short-term slight, negative impact on recreation. Access to archaeological sites may be similarly limited, however, no direct or indirect impacts on the immediate setting of the known archaeology predicted. Potential impact to downstream angling activities as a result of deterioration of water quality. Works at the Clashavoon Substation unlikely to impact on the amenity of nearby facilities (church, national school and GAA grounds) due to their distance and temporary nature. Increased traffic through Millstreet may have an impact on town centre services and the temporary removal of street furniture etc. along the TDR may result in a brief negative impact. However, due to the brief nature of these works, potential impact is expected to be imperceptible.
	Resources and Utilities: Site-won (from 'borrow pits') and imported materiel will have a slight, permanent negative impact on non-renewable resources of the area. This impact is considered to be imperceptible in the long-term. Any peat removed will be used for reinstatement purposes around turbine bases, hardstands and borrow pits. The impact to peat resources is considered imperceptible. Impact on renewable timber resources as a result of felling is considered long-term, slight and negative, however, the overall effect will be neutral as the 88ha of felling will be replanted. Removal of utility infrastructure has the potential to cause a brief to temporary non-significant negative impact on dwellings and commercial/industrial activities in Millstreet and on nearby dwellings and farmsteads. Turbine delivery could potentially cause traffic disturbance and damage to road infrastructure. Cable trenches along public roads will have a temporary, slight, negative impact on the roads concerned, with some likely to require re-surfacing. Waste produced will have an imperceptible impact.
	 Telecoms and Broadcasting: No potential electromagnetic interference effects associated with the turbines or grid connection. Potential to impact on existing overhead telecoms/utilities if services are temporarily disconnected/rerouted to facilitate turbine delivery. Potential impact of the rerouting of overhead telecoms along the TDR is considered to be brief (lasting less than one day), slight negative effect. In the case of temporary disconnections, this has potential to cause a brief (lasting less than one day), reoccurring (up to seven times) slight negative impact to telecoms services along the TDR. Grid connection works have the potential to impact on underground telecoms and broadband services, however none were identified and a negative effect is unlikely.
	 Aviation: Potential for impacts during the late construction phase and prior to commissioning as the wind turbines are constructed and placed in situ. The proposed turbines and cranes required for their installation are considered to be an obstacle to low flying craft. Noting the presence of existing adjacent turbines to the proposed wind farm, the distances to existing airports and the confirmation of no concerns regarding obstacle limitation surface, it is considered therefore that there will be no likely effects.
Operation	 Land Use: Anticipated that there will be minimal impact from the change of land use in areas where access tracks, wind turbine bases, hardstanding

areas, met mast, substation, recreation trail, drainage infrastructure etc. are proposed. Removal of 88ha of commercial will have a long-term slight, negative impact on the existing forestry land use but will be offset by afforestation elsewhere. The 10 no. turbines on farmland will have a longterm slight, negative impact on agricultural land use due to the removal of grazing lands however the uses can coexist and there will be no significant negative impact to agricultural practice. Access tracks, new and upgraded, will be used for maintenance etc. but will also be used for forestry and agricultural practice, providing a long-term slight, positive impact to these land uses whilst also connecting with the Duhallow Way with trailhead car park and picnic area. The recreation infrastructure will have a long-term moderate, positive impact on recreational land use in the area. Repair work along the grid connection and TDR, where necessary, is likely to be brief or temporary and insignificant. Potential for slight temporary negative impact on residential land-use due to noise nuisance as a result of machinery should a turbine component require replacement, along with restrictions on recreational use, therefore an unlikely, brief to temporary insignificant, negative impact on the land use of the TDR area is anticipated. BEMP and Coillte commitments, including stocking densities and wildlife corridors, will have a positive impact on land-use by enhancing the biodiversity of the area.

- Recreation, Amenity and Tourism: Overall, it is expected that the operational phase will have a long-term moderate, positive impact on recreation, amenity and tourism in the area by providing new and upgraded recreation trails at the site. Noting the distance to major tourism attractions of the region, including Blarney Castle, and the literature on tourism attitudes, it considers that the wind farm will have a long-term and non-significant to imperceptible impact on tourism potential of greater Cork. A long-term non-significant, neutral impact on the amenity of the Mount Hillary Looped Walk to the north, due to the distance (10km) and presence of existing wind farms in between, is also anticipated. The CBF will likely benefit Ballinagree in its community facilities, recreation facilities and amenities, resulting in a long-term moderate, positive impact.
- Resources and Utilities: Maintenance of access tracks and infrastructure may require small amounts of imported fill, however, the impact of this is likely to be slight/imperceptible. No impact on existing major utility infrastructure is expected and the setback distance to the 110kV OHL is noted. Direct effect of electricity generation will give rise to a long-term slight positive impact on renewable energy resource. Any waste produced during the operational phase of the wind farm will have an imperceptible impact on the receiving environment.
- Telecoms and Broadcasting: No existing telecoms infrastructure found within 2km of the proposed wind farm. The nearest mast is located in Lacknahacknee Td., c. 3.2km southeast of the nearest turbine (T5). It is shared by4 no. operators. No potential impacts were identified. There is potential for negative impact to domestic broadcasting receivers however due to signal scattering/delay, resulting in a slight negative long-term effect. Potential that overhead lines may require brief disruption in the event that a turbine component requires replacement – in this case the TDR is required. The effects on overhead telecoms would be similar to those for construction. This would result in a brief slight negative impact to telecoms services.

 Aviation: Potential for aviation impacts relate both to obstacle limitation surface (physical obstacles for low flying planes) and potential impacts to aviation infrastructure though electrical interference. Noting that there are no airports in proximity to the proposed wind farm and the lack of potential effects raised during the scoping responses from the IAA, Kerry Airport and Rathcoole Aerodrome, the EIAR considers that there will be no likely effects on aviation operations from the proposed project.

Decommissioning	• Land Use: Similar impacts to the construction phase but of a reduced magnitude. The substation will be taken in charge by Eirgrid / ESB and will remain <i>in situ</i> . The turbine foundations will be covered over and allowed to re-vegetate naturally and access tracks will be left <i>in situ</i> to continue to be used for agricultural, forestry and recreation land uses. Removal of infrastructure may temporarily impact on forestry and agricultural practices where access tracks may be in use by construction crews. Impact to these land uses is expected to be temporary to short-term slight, negative. Similarly, the works will result in the temporary closure of tracks for recreation activities and this will have a temporary to short-term slight, negative impact on recreation activity in the area. Forestry practices and recreation will benefit from the upgraded access tracks left throughout the site resulting in a long-term moderate, positive impact on the forestry industry and recreation activity at the site. The underground grid connection will remain <i>in situ</i> following decommissioning and form part of the national grid and therefore, impact to land use along the grid route is unlikely. BEMP lands are contracted for the duration of the project, reverting to the landowner thereafter.
	• Recreation, Amenity and Tourism: Similar impacts to the construction phase but reduced in magnitude. Forestry tracks and amenity trails will be closed to the public to assure public safety and this is expected to have a short- term moderate, negative impact on recreational trail walking and hiking. Due to the temporary nature of the decommissioning phases of the wind farm, an insignificant and temporary impact is expected.
	 Resources and Utilities: Similar to those associated with construction but of a reduced magnitude. There will be no significant negative impacts on renewable and non-renewable resources during the decommissioning phase. No likely negative impacts on utility infrastructure are expected during the decommissioning phase. Decommissioned turbine components will be reused and recycled where possible and all non-reusable or recyclable materials will be disposed of in a licenced waste facility. As a result, the waste produced during the decommissioning phase will have an imperceptible impact on the receiving environment.
	• Telecoms and Broadcasting: No electromagnetic interference associated with this phase of the project. The grid connection will be left in situ underground within the public roadway. There are no related impacts on telecoms and broadcasting in the area. There is potential for brief disconnection of overhead lines if large turbine components are required to be removed from the site. This has potential to cause a brief slight negative impact to telecoms services.
	• Aviation: The turbines will be dismantled and removed from the site, thereby removing all potential obstacles to aviation – no likely effects identified.
Cumulative	• Potential for a permanent moderate positive cumulative impact on recreation and amenity at the proposed wind farm site as a result of the proposed amenity trail and recreational infrastructure which will work in combination with the existing Duhallow Way. This has potential to further improve health gain in the area and encourage use of the site for exercise.
	• Electricity generating capacity of other developments, including solar farms (see Appendix 1.2), in combination with the proposed wind farm, will have a long-term significant positive cumulative impact on utility infrastructure and renewables and positive impact on national renewable energy resources.
	• The EIAR states that the developer has consulted with telecoms operators and aviation bodies in order to identify any potential effects the proposed project may have on telecoms and aviation. Other existing, consented and

planned projects have been examined for potential cumulative impacts to
telecoms and aviation. No potential cumulative impacts have been identified.

Table MA1: Summary of Potential Effects

Mitigation

- 10.9.14. In relation to land use, the EIAR suggests that design mitigation allowed for the prevention of unnecessary or inappropriate land use alterations to occur, with the footprint kept to the minimum necessary to avoid impact on existing land uses. I specifically note the utilisation of existing forestry tracks and undergrounding of electricity cables in or alongside access tracks to avoid impact on forestry practices. I also note that construction and decommissioning works will be controlled by a Construction and Environmental Management Plan (CEMP) (Appendix 3.1 of Volume 3 of the EIAR) and the role of the CLO to communicate updates on effected lands.
- 10.9.15. Similar to land use, the EIAR states that mitigation measures for recreation, amenity and tourism are primarily related to the preliminary design stage, with specific focus on visual impact, however I note that mitigation to avoid impact on the water quality is set out in chapters 8 (Biodiversity), 9 (Land, Soils and Geology) and 10 (Hydrology & Water Quality). As a result, the construction stage is unlikely to negatively impact on angling activities. Similarly, Chapter 13 (Traffic and Transportation) sets out mitigation measures for potential effects associated with increased traffic volumes of the construction and decommissioning phases. The temporary closure of Duhallow Way will be addressed by an alternative bypass route adjacent existing access tracks.
- 10.9.16. In relation to resources and utilities, the EIAR states that pre-construction surveys will minimise the impact in terms of disruption or damage and cable will be laid above or below existing services where possible and residents and businesses will be informed in advance where street furniture is to be removed. Stone and fill will be sourced locally and excavated from on-site borrow pits insofar as possible in order to minimise CO₂ emissions from transport. The 88ha of commercial forestry to be felled will be replanted at alternative lands. Turbine delivery will be in accordance with a Traffic Management Plan (Appendix 3.1), including safety procedures and a Garda escort, and outside of regular travelling/commuting hours. Finally, I note that a Construction Waste Management Plan (CWMP) will be finalised in accordance with the CEMP.
- 10.9.17. With regards to telecoms and broadcasting, the EIAR states that as there is no potential for electromagnetic interference from the project on telecoms, there are no

mitigation measures proposed for the construction, operation, or decommissioning phase of the proposed project. There is potential for TV broadcasting to be affected at receivers close to the site during the operational phase, i.e., nearby dwellings. Mitigation by design has achieved a setback of over 800m between the proposed turbines and the nearest dwelling which will reduce potential effects on receivers. A protocol will be signed with RTÉ Transmission Network (2RN) which will ensure remedial measures will be implemented should they be required as a result of negative effects on 2RN's network e.g., optimised roof-top antennas or satellite reception. The precise alignment of the cables within the grid route will be established prior to commencement. This will include slit trenching to avoid existing services. Overhead telecom lines along the TDR will be placed underground/briefly disconnected prior to/during turbine delivery. Service interference will be brief (less than 1 day) and communicated in advance to all stakeholders affect prior to works commencing.

10.9.18. In respect of aviation, the EIAR states that the coordinates and elevations for turbines will be supplied to the IAA at the end of the construction phase in line with standard practice for wind farms. An aeronautical obstacle lighting scheme will also be agreed with IAA in line with IAA's consultation response and applied to the proposed turbines.

Residual Impacts

10.9.19. In relation to land use, the EIAR states that there will be no significant adverse negative residual effects arising from the project once the appropriate design measures are incorporated. It considers that the upgrading of access tracks throughout the site will cause a moderate, positive impact for forestry and agriculture at this location. Similarly, the provision of new and upgraded recreation infrastructure is likely to have a long-term significant, positive impact on recreation land use at the site. The creation of BEMP lands will also have a long-term significant, positive impact or ESB. The grid route cable will remain *in situ* and form part of the national grid. The residual impact on land use as a result of the *in-situ* hardstands, foundations, substation and grid connection following decommissioning is likely to be permanent, imperceptible and neutral due to the small extent of land affected. The loss of c. 88ha of forestry will have a long-term slight negative residual impact on forestry in the area, however, the provision of replant lands will result in at least a neutral residual impact on forestry land use at a national scale.

- 10.9.20. In terms of recreation, amenity and tourism, there is potential for a temporary to shortterm slight, negative impact due to the closure of existing forestry tracks and closure of a c. 1km section of the Duhallow Way for a period of 18-24 months during construction, and up to 6-months during decommissioning. A residual permanent significant, positive impact is expected as a result of the provision of new and improved recreation facilities at the site which are expected to remain after decommissioning of the wind farm development. The community benefits during the operational phase due to capital investment in the area is expected to last beyond the decommissioning phase resulting in a residual permanent significant, positive impact on the area.
- 10.9.21. In relation to resources and utilities, the use of aggregates will result in a permanent negative imperceptible residual impact on non-renewable resources however the proposal will result in a long-term slight positive residual impact on non-renewable resources by offsetting the use of fossil fuels in electricity generation. The proposed on-site substation and underground grid route cable will be taken in charge of by Eirgrid or ESB following decommissioning, providing a long-term slight positive residual impact on electricity infrastructure in the area. Residual waste from the construction, operation and decommissioning phases will be disposed of in a licenced waste facility, resulting in a permanent slight negative impact to capacity such facilities.
- 10.9.22. With regards to telecoms and broadcasting, no significant residual effects are expected on telecoms and broadcasting following the implementation of mitigation.
- 10.9.23. In respect of aviation, no residual effects on aviation are expected following mitigation.

Assessment of Direct and Indirect Significant Effects

10.9.24. I have examined, analysed and evaluated Chapters 11 and 16 of the EIAR, all of the associated documentation and submissions on file in respect of material assets.

Recreation, Amenity and Tourism

10.9.25. Concerns regarding the potential operational phase impact on tourism and recreation, and the associated rural economy have been raised. The observers note the proximity of the proposed development to various walking, cycling and hiking routes used by tourists, including Duhallow Way, and suggest that the appeal of these will be reduced by the proposal and that local businesses will be negatively affected as a result.

- 10.9.26. The EIAR notes that both the WEDG 2006 and the dWEDG 2019 state that tourism and wind energy can co-exist happily, with reference to SEAI research that found a positive disposition towards wind farms. Fáilte Ireland research is also referenced, which found that 71% of respondents claimed that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a positive impact on future visits to Ireland. Similar results from Scotland are also provided in the EIAR.
- 10.9.27. I note the presence of the existing Boggeragh Wind Farm (1 and 2) beside the site and the presence of a considerable number of other wind farms within a 20km radius. There is no evidence before the Board that the operational Boggeragh Wind Farm, notwithstanding the lower turbine height than proposed in this instance, has had a significant adverse impact on tourism, recreation or the associated local economy.
- 10.9.28. The proposed development includes improvements to recreational walking trails within the site and would also link to the Duhallow Way walking route through the site. I have addressed the potential landscape and visual impacts of the proposed development elsewhere, but with specific regard to tourism and recreation, I consider that the proposal would generally enhance the tourism and recreational amenities of the area.

Telecommunications and Aviation

- 10.9.29. John O'Sullivan (Brookpark) raised concerns in relation to the loss of mobile phone and TV reception and suggests that the applicant is dismissive of such concerns.
- 10.9.30. With regard to telecoms and aviation, it is clear that the applicant has attempted to engage in consultation with the various service operators, and I note a varying degree of responses from these operators (Table 16-2 of the EIAR). None of the consultation responses received from the Broadcasting Authority of Ireland, Virgin Media, Eir, Vodafone and Three identified any likely impacts, and I consider it unlikely that the proposed development would result in any significant electromagnetic or other interference with telecoms infrastructure and services. Where it does impact on TV reception, I note that the mitigation measures include optimised roof-top antennas or satellite reception. I consider that this will reasonably address the concerns raised but the Board may wish to apply a specific condition in the event of a grant of permission.
- 10.9.31. With regard to aviation, I note that the IAA's submission states that their Air Navigation Services Division should be notified in advance of the erection of any manmade objects. The applicant has also undertaken to erect aviation lighting to the turbines

and I consider this appropriate. If the Board is minded to grant permission, I recommend a suitable condition in this regard, as welcomed in the further information.

Waste and Other Material Assets

- 10.9.32. John O'Sullivan (Brookpark) and Paul and Regina Maguire raised concerns regarding the waste generated during decommissioning include dumping of blades to landfill. The applicant acknowledges a permanent slight negative residual impact to the capacity of such licenced waste facilities and in the current absence of a viable alternative use for decommissioned turbine parts, I accept that the residual impact is negative but not sufficient to warrant a refusal of planning permission. Such an approach would be disproportionate to the overall benefits of the project. Moreover, I note the CWMP will reflect current waste management policy i.e. the circular economy.
- 10.9.33. I concur with the applicant's conclusion that no significant adverse impacts on material assets are likely, although there will be a positive residual impact on electricity supply as a result of the operation of the development. Given the scale and nature of the proposal, no significant cumulative impacts on material assets are likely to occur.

Conclusion on Material Assets

10.9.34. I have considered all of the written submissions made in relation to material assets and the relevant contents of the file including the EIAR. I am satisfied that the potential for impacts on material assets can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposal would not have any unacceptable direct, indirect or cumulative impacts on material assets.

Traffic and Transportation

Issues Raised

- 10.9.35. The local authority had no overall objection but raised some concerns regarding the impact on the local road network, the majority of which could be addressed by condition. They did however recommend the omission of turbine T9 on the basis that it and part of the site access track appeared to be shown on/adjacent to a local road and appear to retain that position notwithstanding the further information response.
- 10.9.36. The Department for Transport had no concerns but suggested consultation with the local authority, TII, and NTA, on any future Greenway and Active Travel infrastructure.

10.9.37. Transport Infrastructure Ireland (TII) had no objection, subject to conditions regarding road reinstatement to TII standards and subject to a Road Safety Audit, and an assessment of structures on the haul route to ensure they can accommodate loadings.

Examination, Analysis and Evaluation

- 10.9.38. Chapter 13 of the EIAR comprises an assessment of the likely impact of project in the context of the traffic and transportation within the study area. It is supported by:
 - Appendix 13.1 and 13.2,
 - Figures 13-1 to 13-10,
 - Tables 13-1 to 13-12,
 - Plates 13-1 to 13-10, and
 - the further information response (Section 3.6.1.2 and 3.6.1.6).
- 10.9.39. The assessment methodology includes field surveys, data counters, desktop studies, consultation (TII, Cork County Council Roads Department and Limerick City and County Council) and utilises guidance published by TII and the EPA. While a 12-24 month construction programme is envisaged, the EIAR assumes a compressed 18-month construction programme for the purposes of construction traffic generation calculations and a 'worst case' assessment i.e., increased traffic movements per day.

Baseline

- 10.9.40. In order of sequence, the EIAR states that the following form the TDR from the Port of Foynes to the main site entrance, Access Point 1: the N69; N18; the M20; the N20; N72, the R583; the L1123 and the L7461. In order of sequence, the grid route follows the L7461, the L3418 and L7472 from Access Point 3 to Clashavoon substation.
- 10.9.41. An automatic traffic count (ATC) survey (7-day) was undertaken on the R583 and local roads between the Millstreet and Clashavoon substation, including the L1123, in April 2021. The survey data is summarised in Appendix 13.1. Baseline traffic volumes for 2024, the anticipated commencement year, is predicted in Table 13-2 of the EIAR.
- 10.9.42. The proposal involves the use of 5 no. access points in total, all existing forestry and agricultural entrances. These access points are illustrated in the EIAR (Plates 13-6 to 13-10) and an assessment of the existing geometry and sightlines is presented in Table 13-3. Having reviewed the existing sightlines at Access Point 1 during my site

inspection, I am not convinced that the Y-distances presented are accurate, particularly the left (westerly) distance which is stated as 160m. In reality, it is closer to 40m due to the horizontal alignment, and a bank/fence opposite requires removal.

- 10.9.43. In addition to the main site entrance for the overall wind farm and the access for all turbine components for the southern cluster (turbines T1 to T13), Access Point 1 shall also be used for construction and operation vehicles, both HGV's and LGV's, and the entrance to the recreational amenity trailhead at the southern temporary compound. It is proposed to widen the existing bellmouth to facilitate the over-sized turbine delivery vehicles and obstructions shall be removed to achieve TII design sightlines.
- 10.9.44. Access Point 2, just off L1123 (the Butter Road), is the main access point for all turbine components for the northern cluster (turbines T14 to T20) and shall also be used for construction and operation vehicles, both HGV's and LGV's. The EIAR notes that this access was previously used to facilitate the construction of the Boggeragh Wind Farm.
- 10.9.45. As noted, the grid connection cable shall exit the site through Access Point 3. This entrance is used by agricultural HGV's and will be for operational access by LGV's.
- 10.9.46. Access Points 4 and 5 are Coillte forestry entrances which will be used during the construction phase by both LGV's and HGV's. These access point will form part of a controlled public road crossing point for construction traffic travelling to and from the proposed borrow pits in the west of the site. This access is regularly used by HGV's associated with agricultural and forestry activities but very low road traffic volumes overall (AADT = 17 recorded in April 2021). I note that sightline upgrades are required.
- 10.9.47. As noted, details of watercourse crossings along the grid connection are considered in Chapter 10 of the EIAR and have been assessed in section 10.8 above. However, I note that the erroneously refers to 4 no. HDD locations, where 3 no. are proposed.
- 10.9.48. Also as previously noted, some temporary accommodation works are also proposed along the TDR. These nodes / POI's are summarised in Table 13-4, the largest of which is 'the temporary staging area' at Drishane Castle, TDR-POI-36. It consists of a hardstanding off the R583 where turbine blades will be transferred to the blade lifting trailers. Vehicles shall enter from the eastern end at an access point located at the R583/L1116 junction and exit from the western end, making use of an existing junction between the R583 and L95831-1. The staging area shall only be used during the

delivery of wind turbine components in accordance with timings identified in the construction stage Traffic Management Plan (TMP) as set out in Appendix 3.1.

10.9.49. As with Access Point 1, having reviewed the existing sightlines at the R583/L95831-1 junction during my site inspection, I am not convinced that the north-easterly Y-distance, which is illustrated as 160m on drawing no. P2114-0101-0005, is entirely accurate. In my opinion, a significant quantum of stone wall will require removal in order to facilitate a sightline of 3m by 160m in a north-easterly direction notwithstanding the proposed widening/bellmouth illustrated on drawing no. P2114-0400-0003. This drawing explicitly states that the 'stone field boundary wall will be avoided'. This will have implications given the setting (see 'cultural heritage' below).

Potential Effects

10 9 50	Potential effects	as identified in the FIAR	are summarised in	Table TT1 below
10.5.50.			, are summanised in	

Project Phase	Potential Effects
Do Nothing	• If the proposed project is not constructed, there will be no change to the current road network and existing traffic patterns within the study area.
Construction	• Wind Farm Site: There will be additional construction related traffic on the public road network over the duration of construction works, including HGVs transporting construction material, excavated material and electrical components and earthworks machinery; fuel trucks; LGVs; and oversized loads, including turbine components. Potential negative impacts on the existing road network resulting from construction traffic include delay/disruption to road users; road safety issues; inappropriate parking of construction related vehicles; soiling of public roads; damage to existing road surfaces. Felling of c. 88ha coniferous forestry is required. A number of sawmills in the vicinity are identified. In terms of projected traffic, I note that the combined HGV and LGV average daily increase is 113 trips/day throughout the construction programme. Table 13-7 of the EIAR sets out the predicted AADT. The busiest period during the construction programme is expected to occur between months 9-13 when combined HGV and LGV traffic increases to c. 175 average daily trips. Negative or adverse effects are considered to be short-term and moderate.
	 Grid Connection: Works in the public road are estimated to take c. 6 months (c. 75m of cable/day – assumed). These works will lead to additional construction traffic and will require temporary rolling road/lane closures. The potential impacts are the same as those identified above for the main wind farm site i.e., delay/disruption to road users etc. In terms of projected traffic, I note that the combined HGV and LGV average daily increase is 9 trips/day throughout the construction programme. Table 13-9 of the EIAR sets out the predicted AADT. The busiest period during the construction programme is expected to occur between months 9-16 when combined HGV and LGV traffic increases to c. 27 average daily trips. Negative or adverse effects are considered to be short-term and slight to moderate. TDR: Delivery of components is a specialist transport operation owing to the oversized loads involved. The EIAR has considered worst-case scenario i.e., 110.5m hub height and 185m blade tip height. Deliveries will

		works are required along the route including load bearing surfaces but are at isolated locations and will not generate significant construction traffic. Whilst the potential impacts are the same as those identified above for the main wind farm site i.e., delay/disruption to road users etc., negative or adverse effects are considered to be temporary term and slight to moderate.
	•	BEMP Lands: Some 18ha of coniferous forestry is being felled. This will give rise to HGV traffic which has been included in the assessment. It is expected that measures associated with the implementation of the BEMP will be equivalent to standard agricultural activities and will be carried out and maintained by the involved landowners, making use of existing farmyard and field entrances and using standard agricultural vehicles and no additional HGV traffic will be generated during the construction phase. Anticipated impacts are short-term and imperceptible.
	•	Overall, I note that the construction phase for the entire project will lead to 36,632 additional HGV trips (two-way) over the duration of the construction works, with an average daily increase of 79 HGV trips/day over the 18-month construction period. This increases to an average of 130 HGV trips/day during the peak month which occurs in months 10 and 11 of the programme for HGV traffic. The average workforce of 30 persons is estimated to give rise to an increase of LGV traffic of 44 trips/day on average, rising to 75 trips during peak periods for LGV traffic during months 10 to 13.
Operation	•	Wind Farm Site and TDR: The wind farm and substation will be operated remotely. Traffic will be associated with operator/maintenance personnel and environmental monitoring/compliance staff, but primarily associated with amenity trail visitors by private car and parking at the trailhead car park. Construction plant could be mobilised or TDR reinstated in the case of turbine repair or component replacement, albeit unlikely. In terms of maintenance/monitoring, effects are considered to be neutral, long-term and imperceptible. In terms of visitors, effects are considered to be long-term, not significant to slight in significance. For unforeseen or unplanned works, it is predicted that negative or adverse effects will be temporary and slight.
	•	Grid Connection: A cable fault could potentially require temporary road works for intrusive investigations and repair, albeit unlikely. The effect has not been assessed but it is anticipated to be negative, temporary and slight.
	•	BEMP: No traffic / effects anticipated.
Decommissioning	•	Wind Farm Site: Turbine foundations and hardstanding will be topsoiled over and allowed to revegetate naturally. Internal access tracks will be left in situ for recreation, forestry and agriculture. Traffic impacts associated will be significantly less than the construction phase due to the considerably lower number of vehicle movements. Negative or adverse effects are considered to be temporary, slight to moderate in significance.
	•	Grid Connection: Infrastructure associated with the grid connection will form part of the national grid and will be left in situ. No impacts are envisaged.
	•	TDR: Temporary accommodation requirements will not be required as turbine components can be dismantled and removed using standard HGVs. Negative or adverse effects are considered to be temporary and slight.
	•	BEMP: No decommissioning activities / effects are envisaged.
Cumulative	•	The potential for cumulative impacts is considered with respect to the grid connection and TDR, as outlined above, together with the existing forestry activities, Knockglass Solar Farm (now built and commissioned), solar farms at Carragraigue, Co. Cork, Cloghmacow, Co. Cork, Berrings, Co. Cork, Currabeha, Co. Cork, extension to Bawnmore Substation to include battery storage, battery storage at Caherdowney, Millstreet, Co. Cork and existing operational wind farms.

٠	No cumulative impacts are identified as a result of these other existing or
	proposed projects.

Table TT1: Summary of Potential Effects

Mitigation

- 10.9.51. The principal measure is compliance with a Traffic Management Plan (TMP). As noted, the TMP is included as part of the CEMP in Appendix 3.1 of the EIAR, and will be further developed prior to commencement in consultation with the roads authority.
- 10.9.52. The traffic management measures to be implemented include:
 - Appointment of a Traffic Management Co-Ordinator.
 - Identification of roads that will be used to access the project site and roads that are not to be used.
 - Use of one-way construction traffic movement systems if desired by the roads authority.
 - Pre-construction and post-construction condition surveys on all public roads that will be used in connection with the development, with the specification and timing of the surveys to be agreed with the roads authority.
 - Reinstatement of all roads to their pre-works condition or better and to the satisfaction of the roads authority on completion of the construction works.
 - Site Inductions to address traffic management and provide guidance on the routes to be used/not used to access the site.
 - Maintenance of a 24-hour emergency phone number for the duration of the construction works.
 - Planning and execution of all necessary temporary traffic management in accordance with best practice, including the Traffic Signs Manual.
 - Letter drops to notify members of the public living near the proposed site and cable route of any particular upcoming traffic related matters (e.g. temporary lane/road closure or delivery of turbine components).
 - Provision of clear signage for accessing the site.
 - Use of a road sweeper to maintain the public roads in a clean condition.

- Site entrances from/to the wind farm and borrow pit will be secured and locked when not in use and controlled by flagmen to assist traffic movements, when required, to allow the safe passage of construction vehicles across the public road, with priority maintained for public traffic. A concrete apron, 40mm below road level and overlaid with surface material, will be laid either side of the crossing point.
- Securing of site entrances when not in use and use of a flagman to assist traffic movements at the site entrance or in other areas, as required.
- Delivery of abnormal loads in accordance with an abnormal load permit and at times and frequencies directed by An Garda Siochána.
- 10.9.53. The proposed mitigation measures for the associated grid connection works include: completion of road works in line with a road opening license; route proofing, including slit trenching with the aim of avoiding existing services in the road; maintenance of local access at all times during any road closures associated with the grid connection works; measures to prevent soil/dirt generated during the works from being transported on the public road; temporary trench reinstatement; and surface overlay after reinstatement; and HDD traffic management carried out as per the TMP.
- 10.9.54. The proposed mitigation measures for the associated turbine delivery route include: submission of a programme of deliveries to the roads authority in advance of deliveries of turbine components to the site to include details of the dates, times and route of each component delivery; deliveries during off-peak times using a convoy and a specialist heavy haulage company; escort by An Garda Siochána; reinstatement of any area affected by the works to its original condition; advance consultation with the local residents and Cork County Council.
- 10.9.55. No additional mitigation measures are required for implementation of the BEMP.
- 10.9.56. Similarly, no further measures are considered necessary for the operational phase.
- 10.9.57. During the decommissioning phase, the proposed mitigation measures will be in line with those identified for the construction phase. It is proposed to agree a decommissioning plan with the planning authority in advance of decommissioning, to include traffic management measures previously identified in Chapter 13 of the EIAR.

Residual Effects

10.9.58. No significant residual impacts during construction, operation or decommissioning are anticipated following the implementation of the proposed mitigation measures.

Assessment of Direct and Indirect Significant Effects

- 10.9.59. I have examined, analysed and evaluated Chapter 13 of the EIAR, all of the associated documentation and submissions on file in respect of traffic and transport issues. I particularly note the initial general concerns raised by the local authority in respect of impact on the surrounding road network and in my opinion, construction traffic and volumes require assessment in this regard. I also note the more specific concerns in respect of the cable route and road condition, particularly in relation to two-lane routes.
- 10.9.60. As noted, concerns regarding the siting of turbine T9 are addressed in section 9.8.

Construction Traffic and Volume

- 10.9.61. Having regard to the nature and scale of the proposed development, it is clear that the greatest potential for negative impacts on traffic and transportation arises during the construction phase, since there will be minimal operational traffic generated.
- 10.9.62. I note the proposed HGV haul route outlined in the EIAR, with all HGV construction traffic facilitated from the northwest, via the N72 National Road, R583 Regional Road and L1123 Butter Road. As noted at the outset, there appears to be some confusion of the road numbering of the Butter Road i.e., it is illustrated in Figure 13.2 as 'L2758/L1123'. Having reviewed the local authority's public road mapping, I consider that the Butter Road consists of the L1123 from Millstreet to Access Point 2 where it then becomes the L2750 (for c. 14.2km) until it's junction with the R619 near Crean's Crossroads. This is clarified by the applicant in their further information response.
- 10.9.63. In the interests of clarity, the haul route from Millstreet is: L1123, L2750 and L7461 and I am satisfied that there are sufficient passing bays along this route. I also note that this route was previously used to construct the existing Boggeragh Wind Farm and it is currently used for HGV traffic associated with forestry/agricultural activities.
- 10.9.64. Similarly, I also note that the grid route from Access Point 3 to Clashavoon substation, according to the local authority's public road mapping should be L7461, L7472, L3419 and L3418. This is generally incidental in terms of construction traffic and volume but is important in the context of the Council's suggested condition that no construction

traffic, including LGVs, travelling to or from the site should be allowed on the following public roads: L-7464-0, L-34192-0, L-7463-0, L-34183-0, L-34182-0 (except at the northern end), L-34181-0, L-7461-44 (south of the site boundary), L-5245-26 and L-3418 between Coppeleen Bawn Cross and Annaganihy Cross. In this regard, I note that the further information response states that none of the roads listed are to be used during construction, and I accept that this is the case with previous errors corrected.

- 10.9.65. Given that the Butter Road to the northwest is generally in reasonably good condition and that there are numerous passing opportunities, I consider that construction traffic management could be addressed through engagement with the local authority, timing of HGV movements, use of convoy systems, flag men etc. Given the short-term and temporary nature of the impacts, I consider that a robust Construction Traffic Management Plan could adequately address the general concerns expressed by the planning authority. I note, in this regard, that the adjacent Boggeragh Wind Farm was previously constructed using the same local road network. While the turbines in that wind farm are smaller than those proposed in this case, the nature of the civil and infrastructure works is similar, with proposed upgrades to the L7461, including new bridge at WF-HF8, which was not previously utilised in the Boggeragh Wind Farm.
- 10.9.66. The sightlines at Access Point 1 along the L7461, main site entrance for the overall wind farm do require further consideration, however, as noted above. A safe access is particularly important at this junction with the public road given it will serve operational vehicles in addition to visitors using the trailhead car parking area. As noted, to achieve a westerly Y-distance of 160m, a bank/fence on the opposite side of the L7461 requires removal and this will also facilitate adequate stopping sight distances on approach in an easterly direction. Appendix 1 (Drawing no. P23-129-0100-0001) illustrates these lands within the applicant's control (blue) and therefore I recommend a suitable sightline condition if the Board are minded to grant permission.
- 10.9.67. The average number of HGV trips per day for the wind farm (excluding the grid connection works) is 72, increasing to 106 during peak construction periods. Spread over a typical workday, and notwithstanding the generally narrow road width of the L7461, I do not consider this to be such a significant volume of additional traffic on this relatively short section of local road off the Butter Road. There may be times, such as during the pouring of the turbine foundations, where HGV movements are concentrated, due to the need to complete sizable concrete pours in a timely manner.

However, noting that only 12 no. of the 20 no. turbines are proposed in the southern cluster, such occurrences would be limited in number and duration and would be capable of being mitigated to an acceptable level by means of agreement/CTMP.

- 10.9.68. With regard to turbine component deliveries, the total number of such movements will be split between the northern (8 no.) and southern (13 no.) clusters, and the specialised nature of such deliveries means that it will be done under highly controlled circumstances, e.g., convoy, escort vehicles, garda escort etc. The applicant contends that the Route Survey Report and swept path analysis submitted with the EIAR verifies that turbine component deliveries can be accommodated with temporary accommodation works. These accommodation works, with the exception of those included within the red line boundary⁴², do not form part of the proposed development before the Board but are assessed within the EIAR. The applicant also notes that the turbine deliveries will be abnormal in terms of dimensions but not in terms of weight.
- 10.9.69. It is a matter for the applicant to obtain the necessary consents to implement the required accommodation works, but noting the information submitted and the presence of the existing Boggeragh Wind Farm which was constructed using the same local roads, I am satisfied that the suitably controlled delivery of turbine components can be achieved without impacting on public safety by reason of a traffic hazard or otherwise impacting on traffic and transportation. While the proposed turbines are larger than those utilised at Boggeragh, the increased availability of specialised equipment, such as blade lifting trailers, allows for tighter swept curves to be achieved.
- 10.9.70. Should the Board be minded to grant permission, I recommend that conditions be included requiring that the Construction Traffic Management Plan be updated prior to the commencement of development and submitted for the agreement of the planning authority, to include:
 - All HGV traffic associated with the proposed development shall be facilitated from the northwest only, via the N72, R583, L1123/L2750 (the Butter Road) and L7461.
 - Clear signage shall be placed along the L1123/L2750 and along the L7461 at locations where forward visibility is limited in agreement with the planning authority.

⁴² TDR-POI-29; TDR-POI-30; TDR-POI-36; TDR-POI-38; and TDR-POI-44.

- A suitable number of passing locations along the L1123, between the Access Point 2 and the R583, and along the L7461, between Access Point 1 and the L2750, shall be identified to the satisfaction of the planning authority. The developer shall obtain all necessary consents for the use of any such lands and for any accommodation works that may be required.
- Protocols and monitoring measures shall be put in place to ensure that HGV traffic travelling to and from the site is suitably controlled so as to minimise the likelihood of HGVs meeting head-on on the L1123/L2750 and L7461. This shall include the placement of suitably trained personnel at locations along the L1123/L2750 and L7461 to be agreed with the planning authority.
- A pre-construction and post-construction survey of the local roads utilised during the construction phase shall be undertaken. The extent, specification and timing of the survey shall be agreed with the planning authority. Any damage to the road, drainage, boundaries or associated features of the public road shall be rectified at the developer's expense to the satisfaction of the planning authority.
- Communications and complaints protocols to ensure that local residents are aware of the construction programme, haul routes, traffic control measures and to provide contact details for complaints or queries.
- Appointment of a dedicated Traffic Management Co-ordinator whose role shall include implementation and monitoring of the TMP, acting as a point of contact for the planning authority, other relevant bodies and members of the public in relation to traffic and transportation matters.
- Provision of a wheelwash facility within the site and measures to prevent soiling of public roads, including the covering of loads and the use of road sweepers, as required.
- 10.9.71. I also recommend that a condition be included requiring the payment of a bond to ensure the satisfactory reinstatement of public roads following completion of the construction phase. The amount of the bond should be agreed with the Council.
- 10.9.72. Overall, I note the c. 18-24 month construction period, the sparsely populated rural nature of the site and the low level of traffic currently utilising the roads. This is fundamentally a construction management issue and while I accept that there are

likely to be short-term temporary negative impacts on the receiving environment due to construction traffic, they are of a type that lend themselves to effective mitigation through a comprehensive CTMP and suitable planning conditions. As noted above, the same roads have previously been used to construct Boggeragh Wind Farm and there is therefore no fundamental reason, in my opinion, why they could not be used to construct the proposal, notwithstanding the larger size of the proposed turbines.

10.9.73. Subject to the mitigation outlined in the EIAR and the abovementioned recommended conditions, I consider that there would be a negative impact on the locality due to the construction traffic, but that this can be mitigated such that the impacts would not be significant. I consider that the short-term negative impacts of construction traffic, including those on the 'famous Butter Road' which was a specific concern raised, would be outweighed by the long-term positive impacts of a renewable energy project.

Road Condition / Grid Connection

- 10.9.74. The local authority raised concerns with regard to the grid connection route and potential impacts on road surfaces. Whilst these concerns stemmed from their experience of previous wind farms on two-lane roads, they recommended that all roads where the cable is installed receive full width regulating and resurfacing, noting surface dressing alone will not suffice and resurfacing shall match existing surface.
- 10.9.75. As noted, the applicant has proposed to undertake pre- and post-construction condition surveys to a specification and timing to be agreed with the local authority and to reinstate all roads to their pre-works condition or better to the satisfaction of the local authority. The local authority has again submitted that this applies to all roads.
- 10.9.76. I note that such surveys and reinstatement requirements, including the imposition of bonds for the satisfactory completion of such works, have been imposed by the Board on other wind farm developments, by way of condition. Given that wind farms are typically located in relatively remote rural areas accessed by local roads, I consider such controls to be reasonable and appropriate given the temporary nature of construction works and the negligible level of operational traffic that such developments generate. This matter can be adequately addressed by way of suitably worded planning condition, should the Board be of the mind to grant permission.
- 10.9.77. As previously noted, Regina and Paul Maguire raised specific concerns regarding the selected cable route passing their home, and whilst this is generally in the context of

health and safety and proximity to their dwelling, it does merit comment here. In this regard, the EIAR details the 7 no. underground and overhead connection options considered (Options A to G). It states that each option was examined for potential environmental effects which included potential effects on nearby residential receptors and settlements, designated sites and sensitive habitats, water quality and flooding, material assets such as roads and utilities, cultural heritage assets and landscape.

- 10.9.78. A comparison of potential environmental effects of each option is presented in Table 2-5 of the EIAR and the selected route (Option B) was chosen as it consists of an underground cable with good road conditions where full road closures will not be required along the full route, reducing impacts on local roads during the construction phase. The route also avoids sensitive habitats and can be accommodated while avoiding negative effects on the Awbeg Bridge and other local heritage structures.
- 10.9.79. Whilst an underground cable route of c. 1km could connect the proposal to the existing Boggeragh substation (Option F), I note that it would traverse a section of peat hydrologically connected to the River Blackwater SAC and has been discounted on this basis. Moreover, the EIAR states that capacity at this substation is unavailable without significant upgrade and on balance, I am satisfied that the options presented have been robustly assessed by the applicant in advance of final route selection.

Operational Traffic

10.9.80. In the operational phase I concur with the applicant's assessment that the impacts will not be significant, due to the nature of the proposal and the minimal traffic it will generate. With regard to the decommissioning phase, the nature of works will be similar to the construction phase, but the extent will be substantially less due to the foundations and other infrastructure being left in situ. I am satisfied that, subject to compliance with a decommissioning plan to be agreed with the planning authority, the traffic impacts associated with the decommissioning phase would not be significant.

Conclusion on Traffic and Transport

10.9.81. I have considered all of the written submissions made in relation to traffic and transportation and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on traffic and transportation can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am

therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on traffic and transportation.

Archaeology, Architectural and Cultural Heritage

Issues Raised

- 10.9.82. The observers raised issues regarding the impact of the proposal on the cultural heritage of the area, including the abundance and density of archaeological sites.
- 10.9.83. The local authority had no overall objection but the Council's archaeologist raised concerns regarding the impact on Drishane Castle demesne and the removal of a bridge/culvert in 'Ballynagree East', and recommended turbines T8 and T9 be omitted, however concerns regarding T8 were resolved with the further information response.

Examination, Analysis and Evaluation

- 10.9.84. Chapter 14 of the EIAR assesses the impacts of the proposal on the known and potential cultural heritage resource which encompasses assets relevant to both the tangible resources (archaeology and architecture heritage); and non-tangible resources (history, folklore, tradition, language, placenames etc.). It is supported by:
 - Appendix 14.1 and 14.2,
 - Figures 14.1 to 14.20,
 - Tables 14-1 to 14-20, and
 - the further information response (Section 3.4.1.6).
- 10.9.85. The assessment methodology includes a desktop study, field surveys and consultation with the Council's archaeologist and the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage⁴³. There are 14 no. recorded monuments or archaeological features within the wind farm site boundary, and the EIAR identifies c. 650 no. recorded archaeological sites within the lands extending for 5km in all directions from the wind farm, the majority of which date to the Bronze Age including standing stones, stone rows etc., and early medieval period e.g., ringforts.
- 10.9.86. The EIAR also notes that there are 31 no. extant prehistoric monuments with potential visual alignments. In addition, a review of the lands extending for 10km from the wind

⁴³ Development Applications Unit (DAU).

farm site boundary revealed the presence of 5 no. national monuments in State ownership/guardianship, including 'Carrigagula Stone Circle' (ref. CO049-007----/National Monument ref. 660) which is located within the main wind farm site. As noted elsewhere in the EIAR, the wind farm site boundary relates to the lands shown in blue.

Baseline

- 10.9.87. The recorded archaeological sites, the townland within which they are located, and their approximate distance from the nearest proposed turbine are as follows:
 - Hut site (CO048-084), Knocknagappul, 1.97km to west (T1).
 - Holy well (CO048-085), Knocknagappul, 1.70km to west (T1).
 - Standing stone (CO049-002), Ballynagree West, 0.44km to north (T12).
 - Five stone circle (CO049-007), Carrigagulla, 0.42km to east (T9).
 - Multiple stone circle (CO049-008), Carrigagulla, 0.27km to southeast (T9).
 - Stone row (CO049-019), Knocknagappul, 0.46km to south (T1).
 - Stone row (CO049-020, Carrigagulla, 0.43km to southeast (T8).
 - County house (CO049-021), Carrigagulla, 0.99km to south (T8).
 - Ringfort (CO049-022), Carrigagulla, 0.96km to southeast (T5).
 - Fulacht fia (CO049-057), Ballynagree East, 0.62km to south (T5).
 - Fulacht fia (CO049-058), Ballynagree East, 0.57km to south (T5).
 - Fulacht fia (CO049-059), Ballynagree East, 0.60km to south (T5).
 - Cairn (CO049-064), Ballynagree East, Carrigduff, 0.62km to north (T13).
 - Burnt mound (CO049-068), Carrigagulla, 0.79km to southeast (T5).
- 10.9.88. Table 14-6 of the EIAR outlines the monuments with potential visual alignments within 5km of the site boundary, 3 no. of which have direct alignment towards the wind farm, albeit some 4.5km to 5.4km from the nearest turbine, one of which is partially extant.
- 10.9.89. Within a wider 10km area, the EIAR identified the 5 no. national monuments. In addition to 'Carrigagulla Stone Circle', as noted above, they include:
 - Knocknakilla Stone Circle (National Monument ref. 420), 4.80km to west.

- Drishane Castle (National Monument ref. 296), 10km to northwest.
- Carrigaphooca Castle and Stone Circle (Nat. Mon. ref. 255), 10km to south.
- Lissacresig Ringfort and Stone Circle (Nat. Mon. ref. 571), 10km to southwest.
- 10.9.90. With regard to architectural heritage, there are no protected structures or NIAH buildings located within the wind farm site or within 1km of its boundary. With regard to potential unrecorded archaeological sites, a review of historic mapping and LiDAR imagery did not identify any such sites or features. The applicant also notes the ground disturbance that occurred when the forestry plantation was created, and the likely further disturbance caused by root growth. A field survey was also undertaken, with nothing of archaeological interest noted beyond the recorded features listed above.
- 10.9.91. This is a cause of slight concern given the wallstead evident in the vicinity of T2, and whilst it is not of significant archaeological interest, it could date from the Famine period and be of relevant cultural interest. A degree of tolerance should therefore be afforded to this field survey which may be described as somewhat perfunctory.
- 10.9.92. I note that the assessment within the EIAR also considers the grid connection route and TDR, as well as the BEMP which is not part of the proposal before the Board.
- 10.9.93. In terms of the grid connection route, there is one recorded site on the public road (L3418) that will form part of the route. It comprises a 19th century masonry bridge (ref. CO060-002), known locally as Awboy Bridge. This crossing will be achieved by HDD within adjacent fields on the east side of the road and no interventions to Awboy Bridge or the River Laney channel will be required. There are no protected structures along the grid connection study area while the NIAH lists a late 19th century house (NIAH ref. 20906002) and a nearby wall-mounted post box (NIAH ref. 20906001) adjacent to this section of the L3418. An adjacent masonry road bridge along the L7472, Clonavrick Bridge, is not a designated architectural heritage structure but is deemed to be of cultural heritage interest. It too will be crossed using HDD. Additionally, I note that the grid connection within the adjacent public road will not extend into the footprint of any of the Famine memorial features of local significance.
- 10.9.94. As noted, the main works along the TDR relate to the temporary staging area at the southern end of the Drishane Castle demesne. It includes a number of protected structures and recorded monuments, including the 15th century castle, as noted above,

and Drishane House (17-19th century) and its curtilage along with the lands and other structures within its walled boundary. In terms of Drishane Castle, the EIAR also notes that all of the protected structures are listed in the NIAH and the estate lands included in the NIAH Historic Gardens/Landscape survey (ref. 2855). Elsewhere, the EIAR acknowledges the replacement of a masonry road bridge, referred to WF-HF8. The bridge is not listed as a protected structure nor included in the NIAH. The EIAR incorrectly states that this bridge is in Ballynagree 'East' as opposed to 'West'.

- 10.9.95. There are no designated architectural heritage buildings located within any of the BEMP lands, nor are there any recorded archaeological sites within the clear-fell areas. There are three recorded archaeological sites located within open agricultural fields within the landholdings and these comprise two fulacht fiadh (refs. CO060-183 and CO060-184) in Oughtihery Td. and a stone row (CO049-019) in Knocknagappul.
- 10.9.96. I note that the EIAR assigns a 'medium' value to all heritage sites within the wind farm site boundary/study area except for 'Carrigagulla Stone Circle' (ref. CO049-007 / Nat. Mon. ref. 660) and the nearby standing stone circle (ref. CO049-008, which are assigned a 'high' value. It notes, however, that all monuments assigned medium values have the potential to possess sub-surface features, artefacts, human burials or other archaeological remains, that may be of high value, but this cannot be discerned without excavation and are unlikely to be affected in the absence of direct impacts.

Potential Effects

10.9.97. Potential effects, as identified in the EIAR, are summarised in Table CH1 below.

Project Phase	Potential Effects
Do Nothing	• A 'Do Nothing Scenario' will see to the continued preservation of recorded and potential cultural heritage features within the study areas.
Construction	• Wind Farm (direct): No predicted direct impacts on known archaeology in the absence of such known sites within the footprint or close environs of the proposed turbines or associated infrastructure. No predicted direct impacts on undesignated architectural or cultural heritage resources identified in the EIAR other than drystone boundary walls in the vicinity of hardstanding areas associated with turbine T5 and T8. These features were attributed a local (low) value and will be subject to direct, permanent, negative impacts of slight significance. I consider that the wallstead in close proximity to turbine T2, and not identified in the EIAR, will be subject to a similar effect and impact. Ground works will have a potential to result in permanent, direct, negative effects on any unrecorded archaeological sites that may survive within forestry cover, although current indeterminable. Potential for the survival of sub-surface archaeological sites and artefacts exists within

	areas of improved pasture and upland boglands and potential exists for direct negative impacts on any such examples.
	• Wind Farm (indirect): No indirect impacts on the immediate setting of the known archaeology in the absence of such sites within 270m of the turbines or within 100m of associated infrastructure. The EIAR states that there are no known architectural heritage structures or undesignated cultural heritage assets within the environs of the wind farm site and no indirect impacts on the setting or associates with these elements of the cultural heritage resource are predicted.
	• Grid Connection (direct): No predicted direct impacts on known archaeology in the absence of such known sites within the footprint of the grid connection but whilst the potential hitherto unrecorded, sub-surface features is low it cannot be entirely discounted. The use of HDD at the locations of 3 no. road bridges will not require any structural interventions, including the recorded archaeological site (ref. CO060-002). This methodology will also avoid impacting on these watercourses which may contain potential unrecorded underwater archaeological features or artefacts.
	• Grid Connection (indirect): Excavation and backfilling of cable trenches will result in no likely indirect impacts on the known resources as there are no recorded cultural heritage assets on trench footprints or green field areas.
	• TDR (direct): The removal/replacement of a 15m modern section of wall, which is unsympathetic to the original estate, to facilitate a road entrance will result in a short-term, direct, slight, negative impact. The creation of the staging area in an area of farmland within Drishane Castle demesne will result in a direct, negative, moderate impact on the curtilage but will have no direct impacts on any buildings or archaeological sites within the property or their close environs. The bridge feature (referred to WF-HF8) to be removed as part of turbine delivery works in Ballynagree West Td. (stated as Ballynagree East in the EIAR) is not listed in the RPS or the NIAH and is likely post-1840s and a type of road culvert feature commonly found but nonetheless a well-preserved example of a stone-built feature associated expansion of the public road network in the area. It is assessed as being of local (low) cultural heritage significance which warrants recording prior to its removal which will result in a permanent, direct, negative impact of moderate significance.
	• TDR (indirect): The ground works and operation of the staging area within an area of farmland in the Drishane Castle as part of the turbine delivery process will have an indirect, short-term, moderate, negative impact on the designated archaeological and architectural heritage structures within the wider property during the construction phase.
	• BEMP Lands (direct/indirect): The proposed biodiversity enhancement measures for these lands will not result in any predicted direct or indirect impacts on the known archaeological sites within these areas.
Operation	• Wind Farm (direct): No predicted direct impacts on the known archaeological, architectural and cultural heritage resources.
	• Wind Farm (indirect): The EIAR considers that the wind farm will result in a range of indirect impacts of a visual nature on the wider setting of the majority of the 14 no. recorded archaeological sites and these will range from not significant to significant. Five turbines (T7 and T8, towers and blades, and T4 to T5, blades only) will be visible above the ridgeline to the southwest and west of the multiple stone circle (ref. CO49-008), in addition to turbine T9 which will be outside the environs of its alignment. The combined effect of these indirect visual impacts on the setting and environs of the alignment of CO49-008 have been determined to be significant. 'Carrigagulla Stone Circle' (ref. CO49-007), also a State Monument (ref.
	660), is located within a forest clearing to the north of CO49-008 and no views of the surrounding lands can be seen from its location due to the tall trees which completely screen its foreground views at ground and skyline levels. Due to the likely ongoing screening effect of thick forestry, there will, therefore, be a slight indirect visual impact on 'Carrigagulla Stone Circle'. The proposed amenity trail will facilitate public access to the stone circles and other monuments within the site boundary and will include trail markers and information signs. As these sites are currently inaccessible to the public, this will result in a moderate positive impact on the cultural heritage resource. There are no likely significant, indirect impacts predicted for the 31 no. extant prehistoric monuments in the wider area as the majority do not possess potential direct ritual alignments towards the main wind farm site but the proposal will, nonetheless, likely result in indirect slight-moderate visual impacts on the setting of monuments within the wider landscape. No potential indirect visual impacts on the locations of the other National Monuments in the wider area and the operational phase will not result in significant impacts on any identified intangible cultural heritage assets.
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	• Grid Connection (direct/indirect): No predicted direct or indirect impacts on the cultural heritage resource as the grid connection will comprise a buried cable within existing roads and a farm lane.
	• TDR (direct/indirect): No direct or indirect impacts will arise as the use of the road network to transport turbines will not occur during this phase according to the EIAR, although I note that turbine components may be replaced throughout the operational phase.
	• BEMP Lands: Biodiversity enhancement measures will see a reduction of grazing activity within lands containing known archaeological sites with a lower potential for disturbance by livestock trampling/scratching e.g., at the location of the remnant stone upright (ref. CO040-019) which will result in a likely direct, slight, positive, long-term impact.
Decommissioning	 No direct impacts on known elements of the cultural heritage resource are predicted during the decommissioning phase as there are no recorded cultural heritage assets located within the footprint, or close environs, of the various elements of the wind farm that will be subject to decommissioning.
	• The decommissioning phase will reverse the indirect, visual impacts on cultural heritage receptors identified.
Cumulative	• The potential for cumulative impacts is considered with respect to the grid connection and TDR, as outlined above, together with the existing forestry works, Knockglass Solar Farm (now built and commissioned), proposed solar farm at Carragraigue, Co. Cork, and existing operational wind farms.
	 In terms of the forestry activities, the EIAR notes that 3 no. fulachaí fia sites to the southern end of the site have been impact by ground works and root action but 'Carrigagulla Stone Circle' remains undisturbed in a small clearing but is entirely screened and therefore indirectly impacted. No direct impacts are identified for any of the surrounding wind or solar farms, with pre- development test-trenching carried out at Carragraigue Solar Farm which demonstrated that identified geophysical anomalies were not of archaeological origin.
	• The proposed development is not predicted to not result in any significant direct cumulative impacts on the cultural heritage resource of the wider area.
	• It is noted that whilst the project will result in slight to significant indirect impacts of the setting of two stone circles (refs. CO049-007 and CO049-008), none of the developments reviewed are located within close proximity to these monuments or are located within the direction of their alignments to the southwest. The EIAR therefore concludes that the reviewed

developments will not combine with the proposal to result in any significant cumulative impacts on the settings of these two monuments.
• Given that the majority of the monuments within the wider landscape have set alignments to the southwest, it is concluded that the proposal will not act in combination with the reviewed developments to result in likely significant indirect cumulative impacts on their immediate settings or ritual alignments.

Table CH1: Summary of Potential Effects

Mitigation

- 10.9.98. In order to mitigate the potential for impacts on unknown or unrecorded archaeology, an advance programme of archaeological site inspections is proposed within all development areas following pre-construction tree felling in order to assess whether there are any visible surface traces of any potential unrecorded archaeological or architectural heritage sites. It is also proposed that archaeological monitoring of ground excavation works during the construction phase will be carried out under license by the NMS. If any sub-surface archaeological features are identified during these site investigations they will be recorded and cordoned off while the NMS are consulted to determine further appropriate mitigation measures, which may include preservation in situ or preservation by record. A similar approach to archaeological monitoring is proposed for the grid connection and the TDR works including at Ballynagree West Td., where an archaeological record of the bridge will be taken.
- 10.9.99. Specific measures include pre-construction geophysical survey followed by targeted archaeological test trenching related to the turbines, hardstands and new access tracks located on improved grassland and at the Drishane Castle demesne lands.
- 10.9.100. The EIAR notes that this will include the investigation of a potential section of a relict field boundary noted in the interface between an area of marginal land and an improved grassland near the hardstand area of T8. The programme of advance investigations will also include the completion of a boundary survey, with photographic record, of the section of the drystone wall, which forms part of the Ballynagree East and Carrigagulla townland boundary, located within the northern end of the T5 hardstand. A pre-construction programme of linear test trenching will be carried out on the footprint of turbines T13, T16 and T17 and along the routes of new access tracks which will require ground excavation works during the construction phase.

Residual Impacts

- 10.9.101. The mitigation measures provide for either the preservation in situ of previously unrecorded archaeology or the adequate recording by full archaeological excavation. The proposed development will result in a number of indirect, not significant to significant, negative, visual impacts on archaeological monuments within the environs of the wind farm site which will be reversed during the decommissioning phase.
- 10.9.102. The removal of a bridge (WF-HF8) in Ballynagree West Td. following the compilation of a pre-works archaeological record, will result in a permanent, direct, negative residual impact of slight-moderate significance on an undesignated heritage asset.

Assessment of Direct and Indirect Significant Effects

- 10.9.103. I have examined, analysed and evaluated Chapter 14 of the EIAR, all of the associated documentation and submissions on file in respect of archaeology and cultural heritage. I particularly note the initial concerns raised by the local authority in respect of the impact of turbines T8 and T9 on nearby stone circles (refs. CO49-007 and CO49-008). They also raised concerns about the replacement of a bridge at 'Ballynagree East' Td., whilst the observers raise general unspecified concerns about cultural heritage impact.
- 10.9.104. In this regard I agree with the observers that there is an abundance and density of archaeological heritage sites in the vicinity of the proposed wind farm but this has been clearly acknowledged in the EIAR, which also accounts for hitherto unrecorded, subsurface archaeological features in line with the proposed mitigation and monitoring.
- 10.9.105. I note that the monitoring approach set out in the EIAR would be consistent with other such large-scale infrastructure development proposals and I consider that it is a reasonable and proportionate approach to the potential for impacts on unknown subsurface remains or sites. I recommend that such archaeological monitoring should be explicitly required by way of condition, if the Board be minded to grant permission.
- 10.9.106. There is also a degree of inference in relation to the visual impact on cultural heritage assets and whilst these issues are also addressed in the landscape and visual impact assessment below, having regard to the separation distances, the intervening topography and hedgerow/treeline vegetation, I am satisfied that the proposed development will not have a significant direct or indirect impact on these architectural and cultural heritage features in the wider area given the general lack of intervisibility.

10.9.107. I therefore agree with the EIAR that the impacts are limited to the 14 no. archaeological features within the wind farm site/study area, and these impacts are indirect, not significant to significant, negative, visual impacts on archaeological monuments. The significant residual impact is identified in the case of the multiple stone circle (ref. CO049-008) only, which is c. 270m southeast of turbine T9 (c. 200m from hardstand).

Turbine T9

- 10.9.108. In this regard, the local authority recommended the omission of turbine T9 and this was addressed by the applicant in their further information response. The local authority's submission on the further information response acknowledges that the applicant has addressed concerns regarding intervisibility to other monuments within the wind farm site and accepts that such intervisibility will not be impacted by turbine T9. They also note that the mitigation measures, including geophysical survey and test trenching, address potential direct effects to subsurface archaeology, however, they state that they do not address the negative effects on the setting of CO049-008.
- 10.9.109. I agree to an extent. The erection of turbine with a hub height range of 102.5m to 110.5 and blade tip range of 179m to 185m within 270m of a recorded monument, gives rise to significant visual impacts. However, the setting of this monument, which I accept is of 'high' value, can only be fully appreciated as an archaeological asset when considered against its purposes and in this regard, there is no clear intervisibility with other monuments of features of archaeological interest. I therefore consider that this impact, whilst nonetheless significant, is clearly an indirect impact on setting and temporary for the lifetime of the wind farm. The stone circle on the other hand, will endure, as it has done for millennia. Moreover, the benefits of the proposal by opening up an access track to this monument will lead to a moderate positive heritage impact.

Turbine T8

- 10.9.110. Similarly, the local authority recommended the omission of turbine T8 and this was addressed by the applicant in their further information response. The local authority's submission accepts the applicant's response and agrees that turbine T8 ought not be omitted given the separation distance to CO049-020, the poorly preserved nature of this monument, and the lack of sightlines to the stone circles to the north of the feature.
- 10.9.111. I fully agree. The remnants of the stone row in question are located to the southern side of an agricultural access track which I could clearly observe during my site

inspection. Regrettably the remainder of the stone appear to have been repurposes as fence and gate posts (see Plate 14-11 of Appendix 14.2). In these circumstances I am satisfied that the significance of the impact has been accurately described as moderate in the EIAR and there is no requirement to seek the removal of turbine T8.

Bridge at Ballynagree West

- 10.9.112. As noted, the local authority also raised concerns regarding a bridge replacement. It is stated throughout the EIAR that this bridge is located in 'Ballynagree East' Td. I have reviewed the various publicly available mapping and I can confirm that the bridge in question, referred to as WF-HF8, is located in the townland of Ballynagree West.
- 10.9.113. As above, the local authority's submission accepts the applicant's further information response and suggests a pre-construction survey with preservation by record. I am satisfied that this is a reasonable approach and could be addressed by planning condition. In this regard, I note that the bridge is not listed in the RPS or the NIAH, nor is it the site of a recorded monument as in the case Awboy Bridge (ref. CO060-002) where HDD is proposed, in addition to two other bridges along the grid route.

Drishane Castle / Temporary Staging Area

- 10.9.114. Finally, the applicant's further information response also clarifies to the satisfaction of the local authority that the temporary staging area is to be removed and the area fully reinstated upon completion of staging works. This is acknowledged and agreed with.
- 10.9.115. I do however have some residual concerns regarding the impact of the proposal on the existing demesne wall beyond the c. 15m section of modern wall to be removed for temporary access. My specific concerns relate to the sightlines on exiting the staging area at the junction of R583 and L95831-1, as noted. Whilst the submitted drawings illustrate sightlines of 3m by 160m in a north-easterly direction, I am not convinced that they are available notwithstanding the proposed widening/bellmouth.
- 10.9.116. In my opinion, a significant quantum of stone wall will require removal in order to facilitate the proposed sightlines, contrary to drawings which state that this wall will be avoided. I therefore recommend a condition requiring the submission and agreement of a conservation method statement if the Board are minded to grant permission.

Conclusion on Archaeology, Architectural and Cultural Heritage

10.9.117. I have considered all of the written submissions made in relation to archaeology, architectural and cultural heritage and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on archaeology, architectural and cultural heritage can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on archaeology, architectural and cultural and cultural heritage.

Landscape and Visual Assessment

Issues Raised

- 10.9.118. The observers raised concerns regarding the landscape and visual impact of the proposal, suggesting that it will create an industrial landscape and impact on the recreational value of the area. These impacts are also referred to under the 'built heritage' topic and more generally under 'visual amenity' in the Planning Assessment.
- 10.9.119. The local authority had no overall objection, indeed their initial submission states that the site and environs can accommodate an additional wind energy development but notes that the Macroom bypass should also be considered in terms of visual impact.

Examination, Analysis and Evaluation

- 10.9.120. Chapter 15 of the EIAR deals with landscape and visual impacts and assesses the likely landscape and visual impacts of the scheme on the receiving environment.
- 10.9.121. It is supported by:
 - Appendix 15.1 and 15.2,
 - Figures 15.1 to 15.23,
 - Tables 15.1 to 15.10, and
 - the further information response (Section 3.2.1 and Appendix 4).
- 10.9.122. I have examined this chapter and the associated tables, figures and appendices. Although closely linked, the landscape and visual impacts are assessed separately.

- 10.9.123. The Landscape Impact Assessment (LIA) relates to changes in the physical landscape brought about by the proposed development, which may alter its character, and how this is experienced, whereas the Visual Impact Assessment (VIA) relates to assessing effects on specific views and on the general visual amenity experienced by people.
- 10.9.124. The EIAR generally considers landscape and visual impacts within a 20km radius study area, in accordance with the recommendations of the WEDG 2006 for blade tips greater than 100m. The exception to this is Blarney Castle, which is located c. 24km southeast of the site. Given the importance of this site it is included as a receptor, even though it falls outside of the study area. In order to focus on receptors and effects within the central study area where there is higher potential for significant impacts to occur, the EIAR also defines a 'central study area' within 5km of the site.
- 10.9.125. The impact classification system is stated to be based on the IEMA Guidelines for Landscape and Visual Impact Assessment (2013). The impact significance matrix (see Table 15.3 of EIAR) ranges from 'Imperceptible' to 'Profound', with judgments of 'Substantial' and above considered to be 'significant impacts' in EIA terms. It applies equally to visual impact significance as it does for landscape impact significance.

Landscape Baseline

- 10.9.126. As noted, the principal landform within the study area is the Boggeragh Mountains. It encloses the site to the north, east and west and creates a basin-like landscape in which much of the southern extent of the site is situate. Musheramore, the highest of the Boggeragh range, rises to c. 644mAOD and contains the westernmost portions of the site. The northern areas are situated across Seefin ridge which rises to a height of c. 491mAOD, whilst Knockcraugh Hill rises to c. 434mAOD further to the east again.
- 10.9.127. The elevated hills and ridges of the Boggeragh range transitions to a low rolling landscape to the north and northwest of the site where the terrain drains into numerous watercourses that flow into the River Blackwater. It is the most prominent watercourse in the wider northern half of the study area where it flows in a general easterly direction.
- 10.9.128. The terrain to the south of the site descends towards a low rolling landscape comprised of low broad ridges and winding river valleys. The nearest river is the River Laney which emerges on the east-facing hillside of Musheramore and passes directly through the site and east of the settlement of Ballinagree. It then meanders through the

southern half of the study area before merging with the River Lee, one of the most distinctive landscape features in the study area where it flows east towards Cork City.

- 10.9.129. Much of the site is contained in large conifer forest plantations which make a prominent imprint on the landscape of the study area and is often found carpeting transitional rolling hills and upland areas within the 20km study area. North and west of the site, the upland terrain is cloaked in areas of mountain moorland and rocky outcrops.
- 10.9.130. A relatively modest rural population exists in the immediate site surrounds due to the upland nature of the terrain. The settlements of Millstreet, Kanturk, Macroom, and the outskirts of Mallow account for the most notable areas of urban land cover within the study area, whilst other features include the linear transport corridors of the N72 and N22. Several active quarries are also located throughout the wider study area.
- 10.9.131. The EIAR states that the nearest dwelling to any of the proposed turbines is 809m which exceeds and complies with the setback distance outlined in the both the current WEDG (500m) and dWEDG 2019 (500m/4 x tip height) for visual amenity purposes.
- 10.9.132. The EIAR notes that the proposed development is principally situated in the easternmost extents of the 'Ridged and Peaked Upland' Landscape Character Type (LCT 15b) although some turbines in the northern cluster straddle the southern portions of 'Fissured Marginal and Forested Rolling Upland' (LCT 14b) and couple in the southern cluster straddles the northern portions of 'Valleyed Marginal Middleground' (LCT13a). LCT15b and LCT14b are recognised as having; Medium landscape sensitivity and Medium Landscape Value, and a County and Local Landscape Importance respectively. LCT 13a is classified with a High Landscape Sensitivity; High Landscape Value; and County Landscape Importance. I have reviewed these LCT's and they are unchanged in the current Development Plan.
- 10.9.133. I also note that a section of the wider western study area falls within Co. Kerry, and therefore the EIAR considers landscape designations in its Development Plan. It notes 'a three-tier classification for rural lands', with the study area designated 'rural secondary special amenity'. I note that the current Development Plan (2022-2028), includes two landscape designations only, namely 'visually sensitive areas' and 'rural general'. Similar provisions apply to 'visually sensitive areas' as did for 'rural secondary special amenity' i.e., 'particularly sensitive to development' with

development only be considered subject to satisfactory integration into the landscape. The relevant area adjoining (west of) LCT 15b is designated a visually sensitive area.

Visual Baseline

- 10.9.134. A Zone of Theoretical Visibility (ZTV) map for the 20km study area is included in Figure 15.9 of the EIAR, based on 'bare ground' terrain data. The ZTV map utilises colour coding to identify areas where different numbers of turbines will be visible. Visibility throughout the western half of the study area is heavily restricted due to the landform immediately west of the site (Musheramore), whilst visibility within the northern half is also limited due to the rolling hills north of Ballinagree (including Seefin ridge). Aside from some elevated ridges and hilltops, much of the visibility in the northern half relates to theoretical visibility of less than 10 turbines and there is limited potential for visibility along the River Blackwater corridor. Settlements within the northern half of the study area will have theoretical visibility, although much of that will be limited. Whilst the eastern outskirts of Millstreet have no visibility, the central and western half of the town have the potential for visibility of up to 5 turbines. Similarly, the small village of Banteer has the potential for intermittent visibility of up to 5 turbines, whilst Rathcool, Kanturk and the western outskirts of Mallow have the potential visibility of up to 10 turbines.
- 10.9.135. Within the southern and eastern half of the study area the ZTV pattern presents with a ripple like pattern highlighting the rolling nature of the terrain here, which principally consists of elongated ridges, river valleys and low rolling hills. Much of the comprehensive ZTV pattern here relates to the most elevated areas of the terrain, which is often not as populated as the low-lying valleys. In the wider southern of the study area there will be no visibility along large sections of the River Lee corridor.
- 10.9.136. The EIAR considers that the most comprehensive visibility occurs in the immediate landscape basin, in addition to areas east and south of the site with the nearby settlements of Ballinagree and Rylane having potential for comprehensive visibility of up to 20 turbines, as do the more distant settlements of Stuake/Donoughmore (c. 10km east of the nearest turbine). Surrounded by a number of rolling hills in the southwest quadrant of the study area, the settlement of Ballyvourney will have no visibility. Macroom (c. 9 km south of the nearest turbine) is the most notable settlement in the southern half of the study area and has the potential to for intermittent visibility

of up to 20 turbines. However, much of the ZTV pattern at Macroom is contained on the elevated north-facing slopes of the River Sullane valley, south of the town centre.

- 10.9.137. Route Screening Analysis (RSA) was also undertaken for roads and the Duhallow Way walking trail within a 5km radius for the stated purpose of bridging the gap between the theoretical ZTV modelling and the actual nature of visibility. The RSA map included in Figure 15.11 of the EIAR illustrates an inverse relationship between 'Fully Screened' and 'Open' views with increasing distance. Beyond 2km, the rolling terrain combined with intervening vegetation tend to restrict open and even partial views, with full screening more common than open or partial views of turbines, and in some cases screened views are more common than both open and partial views combined.
- 10.9.138. With regard to 'Open' views, the southern cluster is stated as the most prominent, accounting for 28.9% of afforded views, whilst the northern cluster accounts for 22.7% of turbine visibility. Open views of both clusters occurs where the basin-like landscape is less enclosed with a notable concentration of such routes east of the River Laney, where the terrain ascends from the river valley, allowing for locally elevated views of the turbines within the basin and along Seefin ridge. Another notable area occurs along the L7461 on the east/northeast facing slopes of Musheramore, southwest of the southern cluster, and looking across the basin towards Seefin ridge. The highest potential for open views of more than 10 turbines occurs in both the <1km band and 2-3km band. I note that beyond the 4km band, views of more than 10 turbines are eliminated and views of between 5-10 turbines is 7.3% of overall site visibility.
- 10.9.139. A total of 34 no. Viewshed Reference Points (VRPs) were identified representing six categories of receptor type, including key views from features of national or international importance, designated scenic routes and views, local community views, centres of population, major routes and amenity and heritage features. The VRPs are illustrated in Figure 15.17 of the EIAR and the table below, collated from tables contained in the EIAR and the further information response, sets out their distance from the nearest turbine, the direction of view, the number of turbines nacelles visible, the sensitivity of each receptor, the magnitude of the visual impact and its significance.
- 10.9.140. I note the numerous references to turbine 'T21' in Table 15.6 but this clearly relates to a previous iteration of the turbine layout. Having regard to the map of the viewpoint locations (Figure 15.17), I am satisfied it has no impact on the information presented.

Table LV1: EIAR Assessment of Visual Impacts

Source: Tables 15.6 and 15.7 of EIAR and Tables 2-1 and 2-2 of Further Information Response

VRP	Location	Distance to	Direction	No. of	EIAR Visual	EIAR Visual	EIAR Significance of Visual
No.		Nearest	of View	Turbine	Receptor	Impact Magnitude	Effect
		Visible		Nacelles	Sensitivity		
		Turbine		Visible			
VP1	R576 at Kanturk	16.4km (T21)	S	6	Medium-Low	Negligible	Imperceptible
VP2	R577 at Boherbue	17.3km (T15)	SE	8	Medium	Low	Slight
VP3	N72 west of Mallow	17.2km (T21)	SW	0	Medium	Negligible	Imperceptible
VP4	Local cemetery at Banteer	11.0km (T21)	S	0	Medium	Negligible	Imperceptible
VP5	N72 at Dromskehy	11.8km (T15)	S	7	Low	Low	Slight-imperceptible
VP6	Mount Hillary	9.2km (T21)	SW	7	High-medium	Low	Moderate-Slight
VP7	L1120 at Rathcool	8.0km (T15)	S/SE	7	Medium-low	Low	Slight
VP8	R582 at Millstreet	9.8km (T1)	SE	0	Medium	Low-negligible	Slight-imperceptible
VP9	Local road at Horsemount North	4.7km (T15)	SE	4	Medium-low	Low	Slight
VP10	Duhallow Way at Glannaharee East	6.9km (T21)	SW	8	Medium	Low-negligible	Slight-imperceptible
VP11	Local road at Inchamay South	1.6km (T21)	S	8	Medium	High-Medium	Substantial-moderate

VP12	L2758 at Ballynagree East	1.2km (T14)	E/S	15	High-medium	High-medium	Substantial-moderate
VP13	Millstreet Country Park	4.9km (T1)	E	0	Medium	Negligible	Imperceptible
VP14	R579 at Barrahaurin	3.4km (T21)	W	2	Medium	Medium-low	Moderate-slight
VP15	Local road a Ballinagree Upper	1.0km (T1)	E	19	Medium	High-medium	Substantial-moderate
VP16	Local road at Mushera	2.9km (T1)	E	0	High-medium	Negligible	Imperceptible
VP17	L2758 at Carrigagulla (1)	1.1km (T10)	N/W	20	Medium	High	Substantial-moderate
VP18	L2758 at Carrigagulla (2)	1.8km (T10)	N/W	19	Medium	High-medium	Substantial-moderate
VP19	R579 regional road at Barrahaurin	6.5km (T21)	W	9	Medium	Low	Slight
VP20	L2758 at Glenaglogh North	2.9km (T10)	W/NW	19	High-medium	Medium	Moderate
VP21	Donoughmore New Cemetery	9.4km (T21)	W	18	Medium	Low	Slight
VP22	Local road northeast of Ballinagree	1.0km (T5)	W/NW	6	Medium-low	High-medium	Moderate
VP23	Residential estate east of Rylane	6.2km (T8)	W/NW	15	Medium-low	Medium-low	Moderate-slight
VP24	Local road at Rahalisk	2.1km (T4)	N	6	Medium	Medium	Moderate
VP25	Local road at Labbadermody	12.6km (T2)	E	6	High-medium	Low	Slight

VP26	Local road southwest of	2.1km (T5)	N/NW	14	Medium-low	Medium	Moderate
	Ballinagree						
VP27	Local road at Bawnmore	4.3km (T4)	N	17	Medium-low	Medium-low	Moderate-slight
VP28	Local road at Aghabullogue	9.6km (T5)	NW	8	Medium-low	Negligible	Imperceptible
VP29	Sleaveen Road, Macroom	10.3km (T5)	N	18	Medium	Low	Slight
VP30	Local road at Kilnamartyra	13.9km (T2)	NE	18	Medium	Low	Slight
VP31	L2202 local road south of the River Lee	15.9km (T5)	NW	15	High-medium	Low	Slight
VP32	N22 at Dunisky	13.8km (T5)	N	12	Medium	Low	Slight
VP33	Local road at Carrignaneelagh	17.8km (T4)	NE	19	High-medium	Low-negligible	Slight-imperceptible
VP34	Tirelton	17.7km (T5)	N	20	High-medium	Low-negligible	Slight-imperceptible
RFI–	N22 (Macroom Bypass) at	11.6km	N	3	Medium	Low-negligible	Slight-imperceptible
VP1	Coolcower Roundabout						
RFI–	N22 (Macroom Bypass) at	8.7km	NE	>10	Medium-low	Low	Slight
VP2	Kilnagurteen						

Note: The EIAR considers judgements of 'substantial' and above to be 'significant impacts' in EIA terms (see Table 15.3).

Potential Effects

10.9.141. POLEINIAI ENECIS. AS IDENNIED IN THE ETAR. ATE SUMMANSED IN TADIE LVZ DEION	10.9.141.	Potential effects.	as identified in the EIAR.	are summarised in Table LV2 below
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Project Phase	Potential Effects
Do Nothing	• The existing conifer plantations that cloak the majority of the site would continue to be managed through rotations of commercial conifer planting and harvesting.
Construction	Landscape: Modest physical impact on landscape within the site due to its small footprint, limited land disturbance/vegetation clearance, excavations to tie into existing ground levels, location of internal access tracks to avoid environmental constraints, internal site cabling to follow access tracks, road layout follows natural contours to minimise 'cut and fill', minor works associated with the 110kV substation, heavily screened by surrounding terrain, location of grid connection route in private lands/public roads and temporary short term duration of works. Installation of grid connection will result in minor and localised construction stage landscape effects. Some temporary/short term, not significant construction activities (workers and heavy machinery), bare ground and stockpiling of materials, including the landscape character at Drishane Castle demesne lands where the effects will be temporary and reversible. Overall, construction stage landscape effects are considered to be Medium magnitude.
Operation	• Landscape: With regard to the significance of potential landscape impacts, the EIAR contends that this is Moderate within the central study area, while in the wider study area (i.e. beyond 5km from the site), the significance of landscape impact is not considered to exceed Slight, reducing to Slight-Imperceptible at increasing distances as the project becomes a progressively smaller component of the wider landscape fabric.
	• Visual: As noted in Table LV1, the sensitivity of the visual receptors varies from Low to High-medium, with the highest sensitivity receptors tending to relate to the designated scenic routes (S18, S19 and S20) and the Duhallow Way, national walking trail, from elevated views across the broad basin. A total of 12 of the 36 views are deemed to have low-negligible range significance judgements (Slight-imperceptible/Imperceptible). These are typically long-distance views or views where the proposed turbines are heavily screened by a combination of terrain and intervening vegetation. Of the remaining views, 5 no. are rated as 'Substantial-moderate' (VP11, VP12, VP15, VP17 and VP18). These typically relate to views from the within the central parts of the study area which are representative of a mix of scenic designations, local community views and amenity and heritage features.
	• Visual (designated views): VP11 is stated to represent scenic route S18 which is influenced by Boggeragh Wind Farm (1 and 2) and Carrigcannon Wind Farm. It is stated that, whilst all 8 turbines in the northern cluster will be prominently visible, they will appear as an extension to 'Boggeragh 2'. I also note that scenic route S20 is represented by <i>inter alia</i> VP12, VP17 and VP18, with the latter two representing views the lower-lying areas of the landscape basin, with turbines intermittent on both sides of the L2758 and few instances where clear views of both clusters in combination. VP12, on the other hand, illustrates one of the broadest and elevated views afforded from S20 where it crosses a saddle in the western extents of the Boggeragh range, between Seefin ridge and Musheramore. The significance of impact is resultant of the dominant visual presence of the development in combination with issues arising from the northern turbines partially rotating

	against Seefin ridge at a near distance. Overall, the EIAR does not consider any significant visual impacts will occur in respect of designated views.
	• Visual (local community views): Four out of 13 no. representative views of people who live, work and move around the area were rated as experiencing a 'Substantial-moderate' impact significance, namely VP12, VP15, VP17 and VP18. The EIAR states that only VP15 solely represents the local community with a long-distance view across the broad River Laney basin and dominated by extensive conifer forestry. The southern cluster will be visible at a distance of c. 1km and will be contained within the broad river basin, whilst the northern cluster appears clearly separated where it presents along the Seefin ridge. Overall, the EIAR does not consider significant visual impacts will occur in respect of local community views.
	• Visual (centres of population): None of 14 no. representative views were rated as experiencing a 'Substantial-moderate' impact significance. Visual impact significance ranges from 'Moderate' to 'Slight-imperceptible' which principally relates to settlement distance and reflects the impacts in Ballinagree and Rylane, respectively. Overall, the EIAR does not consider the proposal will result in significant visual impacts at centres of population.
	• Visual (major routes): None of the 3 no. representative views (VP3, VP5 and VP32) were rated as experiencing a 'Substantial-moderate' impact significance, however a marginal increase in the visual presence is noted along the N22 (VP32) but views will only occur as fleeting glimpses along isolated section of road. The visual impact significance at VP32 is therefore deemed to be 'Slight'. Regarding the concerns raised by the local authority in relation to the N22 Macroom bypass, which was under construction at the time, I note that additional viewpoints, RFI-VP1 and RFI-VP2, are rated as 'Slight-imperceptible' and 'slight' respectively. Overall, the EIAR does not consider the proposal will result in significant visual impacts on major routes.
	• Visual (heritage and amenity): Two of the 7 no. representative views were rated as experiencing a 'Substantial-moderate' impact significance, namely VP12 and VP17. These two along with VP10 and VP16 were specifically chosen to represent the Duhallow Way which traverses the study area and passes directly through the site. The EIAR notes that whilst the turbines will have a dominant visual presence along sections of this waymarked trail, they will not obstruct views afforded of neighbouring ridges or distant mountains. Views of turbines at a near distance are also commonplace along sections of the Duhallow Way in the Boggeragh Mountains, and therefore the proposed project will not appear as an uncharacterised feature. I also note that Blarney Castle was identified as a potential receptor due to its heritage and touristic values and a wireframe montage was generated to assess the potential for turbine visibility. The EIAR notes that whilst there is some potential for distant brief glimpses from the upper levels of the Castle, this will be barely discernible from this distance of c. 24km to the nearest turbine and overall, the EIAR does not consider that significant impacts will arise.
Decommissioning	• Landscape: Some temporary effects, similar to construction, with movement of large turbines away from site, minor loss of vegetation (to be reinstated). In the long-term landscape impacts will be reversible with limited evidence of its existence on the site within 2 to 3 years of decommissioning (with retention only of foundations, hardstanding and on-site substation). Decommissioning stage effects are not considered to be significant.
Cumulative	• With regard to cumulative landscape and visual impacts, the EIAR notes 10 no. operational wind farms and 4 no. permitted wind farms within the study area. These are listed in Table 15.9 of the EIAR. Given the absence of other tall structures within the study area, the EIAR considers that there is no potential for in combination effects with other types of development. An assessment of cumulative visual impacts is provided in the EIAR, utilising a cumulative ZTV map (see Appendix 15.2 of the EIAR) with analysis from

each of the VRPs regarding the number of wind farms visible and whether
there is a combined view, a succession view or a sequential view (see Table
15.10 of EIAR). Overall, the EIAR contends that the proposal will contribute
an additional cumulative effect that is in the order of High-medium within the
Boggeragh Mountains which will reduced to Low in the wider surrounds
where the turbines will appear as an extension to existing developments.

Table LV2: Summary of Potential Effects

Mitigation

10.9.142. Given the highly visible nature of wind energy developments, it is contended that it is not feasible to screen them from view using on-site measures. Instead, the two main forms of landscape and visual mitigation employed were mitigation by avoidance and design (i.e., layout iteration and reverse-ZTV) and buffering of residential receptors.

Residual Effects

10.9.143. The EIAR considers that the proposal will not result in significant visual impacts, albeit be some localised impacts that are close to significant in the immediate proximity of the southern turbine cluster are acknowledged. Furthermore, it states that this is a robust working upland context that is strongly characterised by extensive forestry and large-scale wind energy development and thus it considers that the site and its surrounds can accommodate an additional large-scale wind energy development.

Assessment of Direct and Indirect Significant Effects

- 10.9.144. I have examined, analysed and evaluated Chapter 15 of the EIAR, all of the associated documentation and submissions on file in respect of landscape and visual effects. I have inspected the site and surrounding area, including the most sensitive viewpoints highlighted in the assessment of visual impact (section 15.8 of the EIAR) and had regard to landscape character and sensitivity as set out in the policy framework in the Cork County Development Plan 2022-2028 and the sensitive receptors identified.
- 10.9.145. As noted, the mains concerns relate to the proposal's landscape and visual impacts.

Potential Landscape Impacts

10.9.146. There will be some temporary landscape impacts during the construction phase including along the grid connection route and at Drishane Castle demesne but I agree with the EIAR that these are modest and not significant and overall, of medium magnitude. My assessment therefore focuses on the proposed wind turbine structures.

- 10.9.147. The Landscape Character Assessment for the County states that the 'Ridged and Peaked Upland' (LCT 15b) is of medium landscape value, medium landscape sensitivity and County importance. Fourteen of the 20 no. proposed turbines are located within this LCT. The northern cluster of turbines straddles this LCT and the adjoining 'Fissured Marginal and Forested Rolling Upland' (LCT 14b) which is also of medium value and sensitivity, but of local importance. Five of the northern cluster (T14, T15, T18, T19 and T20) are located within this LCT. The southernmost extent of the southern cluster straddles LCT 15b and 'Valleyed Marginal Middleground' (LCT 13a) which is of high landscape value, high landscape sensitivity and County importance. Two of the southern cluster (T4 and T5) are located within this LCT.
- 10.9.148. There is no LCT capacity assessment *per se* in the Development Plan but it does include a Wind Energy Strategy Map which is a clear plan-led approach to the identification of areas suitable for wind energy development. As noted above, the application site falls within an area 'open to consideration', with some of the site in the vicinity of turbine T2 straddling a 'normally discouraged' area. Adverse impacts on the visual quality of the landscape and the degree to which the impacts are highly visible over wider areas must be avoided in areas deemed 'open to consideration'.
- 10.9.149. I also note that the EIAR outlines a number of general recommendations from the Draft Cork County Landscape Strategy 2007 regarding the subject LCT's. Whilst this strategy is of no statutory bearing, it does provide some further context to the LCT's. In terms of LCT15b and LCT14b it seeks to recognise the value of the upland areas of the Boggeragh Mountains as a tourism resource for hillwalking with the role of tourism also recognised for LCT13a. Other recommendations relate to promoting the scenic value of LCT15b as a visitor attraction (waymarked trails etc.) and maintaining the visual quality of the hill slopes in LCT14b by appropriate siting on visually unobtrusive sites and by having regard to the impact of wind farms on the landscape.
- 10.9.150. However, noting that there are significant and expansive existing man-made interventions in the landscape surrounding the site, including large-scale commercial forestry plantations and the existing Boggeragh Wind Farm (1 and 2), I do not consider that the aforementioned LCT's comprise an area of "particular scenic beauty" as suggested by the observers. Having regard to the confluence of LCT's across the proposed site, I concur with the applicant that the landscape of the study area exhibits transitional characteristics and generally agree that this is consistent with a

'Transitional Marginal Landscapes' landscape type as set out in the WEDG 2006. I also concur with the statement in the EIAR that the landscape, whilst scenic and sensitive, has more characteristics of a typical working landscape of coniferous forest plantations, rolling pastoral farmland and existing wind farms, in comparison to the more naturalistic moorland at Musheramore and its associated ridgelines due west which is mostly appreciated from the local road network further west of the ridgeline.

- 10.9.151. The Boggeragh Mountains covers a very extensive area with varying landscape characteristics. While it may include some highly sensitive landscape character receptors not accounted for in the LCA, this sensitivity is evidently not uniform across the entire area. Having inspected the site and surrounding areas and having reviewed the information submitted by all parties, I would agree with the statement in the EIAR that the site and central study area have a Medium landscape sensitivity, with areas to the south of the site, in the vicinity of Musheramore increasing to High sensitivity.
- 10.9.152. The presence of the existing Boggeragh Wind Farm (1 and 2) is a key characteristic in the receiving landscape and it is notable from the photomontages that the northern cluster of the proposed wind farm generally 'reads' to the observer as an extension or continuation of the Boggeragh complex, with a continued march of turbines across the landscape along similar ridges. While the existing turbines at Boggeragh are smaller than those proposed, they do, nevertheless, form an important anchoring element in the landscape and are representative of emerging trends. From more elevated areas many of the considerable number of existing wind farms in the study area are visible (see for example VP12 from L2758 towards Bawnmore Wind Farm), and I consider that these also form an important baseline characteristic of the wider landscape.
- 10.9.153. In terms of the significance of the potential landscape impacts, I note from the ZTV that visibility of the proposed development from the more sensitive landscape areas to the south is limited due to the screening effect of intervening terrain. The proposed development would have an impact on the landscape but noting the nature and characteristics of the receiving landscape as outlined above, I concur with the conclusion of the EIAR that the proposed development would have a Moderate landscape impact within the 5km study area, reducing beyond this as it becomes a smaller element of what is a complex and varied landscape. I therefore consider that the proposal would not have an unacceptable impact on the receiving landscape and I agree with the planning authority that there is capacity to absorb additional turbines

Potential Visual Impacts

- 10.9.154. As with landscape impacts, I considered that there will be temporary visual impacts associated with the construction phase but this is not a cause for concern nor has it been raised. My assessment therefore focuses on the turbine structures proposed.
- 10.9.155. Having inspected the application site and surrounding area, including the various scenic routes and views, I note that the site sits within an uplands area comprising a patchwork of commercial conifer plantations, agricultural grasslands, heath, hedgerows, and scattered residential and agricultural development. The existing Boggeragh Wind Farm (1 and 2) is a notable feature of the receiving environment, as are the various other wind farms within the wider area, when seen from elevated areas.
- 10.9.156. The EIAR, making use of ZTV maps, identified an initial 34 no. VRPs, increased to 36 no. with further information. I consider this to be a suitably comprehensive range of viewpoints, having regard to the characteristics and visual sensitivities of the area and the various scenic views and prospects potentially affected. Having inspected the application site and surrounding area, I also consider the selection of the VRP locations to be reasonable and suitably representative of key receptors/viewpoints.
- 10.9.157. It is clear that the height and scale of the proposed wind turbines is such that they undoubtedly have the potential to impact on the visual amenities and character of the area. Furthermore, due to their scale, these impacts cannot be effectively mitigated (such as by screening vegetation). The careful locating, design and layout of the turbines is therefore the only effective means of reducing the significance of impact
- 10.9.158. As noted, the northern and southern turbine clusters are bisected by the L2750, which is a section of the Butter Road, and also forms part of scenic route S20 and Duhallow Way, a national waymarked walking trail. I therefore consider that S20 has the greatest potential to be significantly impacted upon given its heritage and recreational significance. As noted, it is described in the Development Plan as 'views of and from the Boggeragh Mountains' and VP10, VP12, VP16 and VP17 are presented as the representative views. It is notable that the particular significance and scenic nature of VP12 is the panoramic views it offers to the south, extending across the River Laney basin. While the proposed southern cluster would be highly visible from VP12, with a distance to the nearest turbine of c. 1.3km (T12), they would be generally located on lower ground to the southeast in the river basin. It is also of note that the existing

Bawnmore wind turbines are already visible from this location. I consider that the layout of the proposed southern cluster seen from this location is such that it reads as a logical, albeit distant, expansion of Bawnmore, with a coherent and legible layout of existing and proposed turbines without obstructing views afforded to neighbouring ridges or mountains. Considering the highly visible and relatively dominant nature of the turbines when seen from this location but noting turbines at a near distance are also commonplace along sections of the Duhallow Way in the Boggeragh Mountains, I concur with the applicant's assessment that the significance of the visual impact can be described as 'Substantial-moderate' but close to significant relative to proximity.

- 10.9.159. With regard to visual impacts more generally, other than illustrated in the VRPs, I note that while expansive views of the site are available from many areas in the vicinity of the Butter Road, these are not views of undeveloped and undisturbed uplands, but rather views of a patchwork of mostly actively managed land uses, with commercial forestry being the most notable. The presence of the existing Boggeragh Wind Farm (1 and 2) is a key characteristic in existing views and as I have noted above, from many viewpoints the proposed northern cluster 'reads' to the observer as an extension or continuation of this existing wind farm, notwithstanding the larger turbines proposed, with the exception of turbines T13 and T17 on the southern slope of Seefin ridge. They both come within 1km of the closest point along this section of the scenic route S20.
- 10.9.160. These turbines, in my opinion, become more prominent and dominant on road users travelling along this route. As noted, whilst the northern cluster is generally contained along Seefin ridge and presents as an infill between Boggeragh 1 and Boggeragh 2, turbines T13 and T17 would appear isolated and could give rise to an overbearing impact on road users given the fact they will be significantly elevated above road level.
- 10.9.161. Moreover, and as noted in the EIAR, the effect of these turbines partially rotating against Seefin ridge on an undisturbed area of upland heath and moorland will further compound the visual impact. For these reasons, I consider the visual impact of turbines T13 and T17 on scenic route S20 and the recreational value afforded to this section of Duhallow Way to be underestimated in the EIAR. I therefore broadly agree with the observers and recommend their omission in the event of a grant of permission.
- 10.9.162. Beyond the immediate vicinity of the site, I note that the route screening analysis undertaken by the applicant demonstrates that views of the proposed development

will be partially or fully screened from many sections of local roads within 5km of the site due to intervening hedgerows and treelines. With regard to views from the village of Rylane, it is clear that only fleeting views and mainly of the tips of particular turbine blades will be visible from the central areas of the village (see photomontages of VP23) and whereas more of the particular turbines will be visible from Ballinagree, views are limited to the closest of the southern cluster (see VP26). I do not consider this to be a significant visual impact. With regard to visual impacts on dwellings in the area, I note that the minimum separation distance from any turbine is stated as 809m. I consider this adequate to protect residential amenity from any significant visual impact.

Potential Cumulative Impacts

- 10.9.163. With regard to potential cumulative impacts, there are a total of 10 no. operational and 4 no. permitted wind farms within the wider 20km study area according to the EIAR. It provides cumulative ZTV maps and an assessment of the nature of cumulative visibility from each viewpoint. The ZTV map indicates that, where the proposed development is clearly visible, it will be theoretically be seen together with at least one other wind energy development (noting the bare-ground basis of ZTV mapping).
- 10.9.164. Within the central area this will generally be the Boggeragh Wind Farm (1 and 2), due to its proximity and the above assessment considers the cumulative impacts of the two wind farms. There is a considerable cluster of existing wind farms on the Cork-Kerry border in the vicinity of Ballyvourney, to the east-southeast of the application site. In views near this eastern part of the study area, the proposed development is generally viewed in combination with the existing Boggeragh complex and/or the other existing wind farms (see photomontages VP25 for example). Having regard to the extent of this strongly established landscape and visual feature in the eastern portion of the study area, I am satisfied that the proposed development would not result in a significant cumulative landscape and visual impact beyond that which already exists.

Conclusion on Landscape and Visual Impact

10.9.165. I have considered all of the written submissions made in relation to landscape and visual impacts and the relevant contents of the file including the EIAR. I am satisfied that the potential for landscape and visual impacts can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed

development would not have any unacceptable direct, indirect or cumulative landscape and visual impacts subject to the omission of turbines T13 and T17.

Overall Conclusion on Material Assets, Cultural Heritage and the Landscape

10.9.166. Having regard to the foregoing, I am satisfied that the potential for significant adverse impacts on material assets, cultural heritage and the landscape be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions, including those requiring the omission of turbines. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on material assets, cultural heritage and the landscape.

10.10. Interactions

- 10.10.1. The interactions between the above factors is addressed in Chapter 17 of the EIAR. Generally, the interactions relate to construction phase effects, although some operational phase interactions are identified, including a number of positive effects, such as air quality and climate *and* population and human health. The interactions between the factors are graphically tabulated in Table 17-1 and described in Table 17-2 of the EIAR. A residual permanent significant, positive impact on recreation, amenity and tourism is expected as a result of the provision of new recreation facilities at the proposed wind farm site which will interact with cultural heritage assets, providing public access to stone circles and other monuments at the wind farm site, is identified.
- 10.10.2. Having regard to the nature of the proposed development, the receiving environment and the foregoing chapters of the EIAR, I am satisfied that the summary of the potential for interactions between environmental factors is reasonably set out in this chapter.

10.11. Accident and Disaster Risks

Issues Raised

10.11.1. No specific issues raised in respect of risk of major accidents or natural disasters. Peat slippage concerns were raised by John O'Sullivan (Brookpark) and this has been specifically addressed under 'soils and geology' (see section 10.8). Similarly, the OPW raised initial concerns regarding flooding and this is addressed in section 10.8.

- 10.11.2. Whilst I note that the Health and Safety Authority (HSA) did not comment, I am fully aware of their comments during the scoping stage where they note that the proposal is outside the scope of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015, and thus have no observations to make⁴⁴.
- 10.11.3. I note that the EPA did not respond to the consultation or the initial scoping request.

Examination, Analysis and Evaluation

- 10.11.4. Section 11.7.3.4 of Chapter 11 of the EIAR deals with the risk of major accidents and/or natural disasters. I have examined this chapter which also deals with 'population and human health' and 'material assets' (sections 10.6 and 10.9 above).
- 10.11.5. The baseline environment is therefore set out in section 10.6. It notes that the closest Seveso site is located 20km northeast at the LP Gas Filling Services, south of Mallow. Given Ireland's temperate climate, the EIAR considers the potential natural disasters are limited to flooding; fire; major incidents; catastrophic events; and landslides.

Potential Effects

0.11.6. Potential effects, as identified	in the EIAR, are summarised	in Table ADR1 below.
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Project Phase	Potential Effects		
Do Nothing	• Not examined but it is anticipated that the similar risks will persists in respect of flooding with marginally less risk in terms of fire, major incidents and catastrophic events. The risk of landslide would be substantially less.		
Construction/Operation	Flooding: Closest mapped flood event occurred c. 650m to the northeast		
and Decommissioning	of turbine T10, along the Butter Road, where the road is liable to flood after heavy rain (recurring incident). There is a similar recurring incident c. 1.65km downstream from the BEMP lands but overall, there is no record of historical flooding at, or within a 2km buffer of, the site or grid route. With the proposed implementation of mitigation measures to manage surface water on site, mimic natural flows and manage discharges to water bodies, no significant risk of flooding is identified (see Table GH2).		
	• Fire: Potential for fire mitigated by design i.e., turbines, met mast and substation are set back from treelines in order to maintain a fire break. No significant impacts identified.		
	Major incidents: No potential effects identified due to nature of development and distance from Seveso sites.		
	• Catastrophic events: Potential catastrophic events include wind turbine toppling (due to foundation or tower failure); wind turbine rotational failure in extreme wind conditions (due to control system or rotor break); and		

⁴⁴ See Appendix 5.1 (email dated 22nd July 2020).

fire which have been addressed through design mitigation including turbine specification and assurance. No significant impacts identified.
• Landslides: Landslides as a result of slope instability pose a risk to a range of environmental receptors including human safety (including traffic), hydrology and water quality, biodiversity, land, soil, geology and hydrogeology, material assets and archaeological and cultural heritage. The magnitude of potential impacts is stated to be of negligible significance (see Table GH1).

Table ADR1: Summary of Potential Effects

Assessment of Direct and Indirect Significant Effects

- 10.11.7. I have examined, analysed and evaluated Chapter 11 of the EIAR, all of the associated documentation and submissions on file in respect of risk of major accidents and/or natural disaster. Having regard to the nature and location of the development in a remote rural area, removed from centres of population, and to the technical information on file, I am generally satisfied that there are no significant adverse effects on the environment deriving from its vulnerability to major accidents or to natural disasters.
- 10.11.8. However, having regard to my comments in respect of the peat stability assessment, I am not satisfied that the vulnerability of the development to peat instability has been adequately addressed in respect of proposed turbines T3, T13 and T17. I therefore recommend their omission if the Board are minded to grant planning permission.

10.12. Reasoned Conclusion

- 10.12.1. Having regard to the examination of environmental information contained above, and in particular to the EIAR and further information provided by the applicant, and the reports and recommendation of the local authority, submissions by prescribed bodies and observers in the course of the application, I consider that the main significant direct and indirect effects of the proposed development on the environment are:
 - Population and Human Health: Potential significant positive impacts on the socio-economic profile of the area due to community funding and investment; potential significant health and safety impacts during construction, operation and decommissioning that will be mitigated through the implementation of the measures set out in the EIAR, including the Construction Environmental Management Plan, best practice construction methods, appropriate training, installation of shadow flicker and ice detection systems on turbines, remote monitoring and scheduled maintenance.

- **Biodiversity:** Potential significant effects on habitats, mammals, bats, birds and aquatic ecology in the construction phase and operational phase which would be mitigated by the implementation of the mitigation measures contained in the Environmental Impact Assessment Report, including the Construction Environmental Management Plan, good practice construction measures, timing of vegetation removal, water pollution prevention measures, provision of bird/bat boxes, use of buffer zones, biosecurity measures and the appointment of an Ecological Clerk of Works and Environmental Manager. Further precommencement biodiversity surveys are also proposed. Significant impacts on areas of Annex I European Dry Heath [4030], which is suitable foraging habitat for hen harrier, can be avoided through the omission of turbines T2, T3, T13 and T17.
- Land, Soils, Water, Air and Climate: Potential significant effects on hydrology, hydrogeology and soils would be mitigated by a series of best practice construction management and pollution prevention measures and other specific measures outlined in the EIAR, including the Construction Environmental Management Plan, surface water management plan, use of buffer zones, erosion control and pollution prevention measures, and appointment of an Environmental Manager. Positive air quality and climate impacts are identified for the operational phase due to the offsetting of fossil fuels by the generation of renewable energy. Construction noise will be mitigated by the measures outlined in the CEMP, while cumulative operational noise with the Boggeragh Wind Farm (1 and 2) will be mitigated by curtailment of turbine operation, if required. Significant impacts from landslide/peat slippage can be avoided through the omission of turbines T3, T13 and T17.
- Material Assets, Cultural Heritage and the Landscape: Potential positive impacts on material assets due to the provision of new and upgraded recreational walking trails. Traffic impacts will be short-term and temporary and will be mitigated during construction by the measures set out in the EIAR, including the CEMP, Traffic Management Plan and appointment of a Traffic Management Co-Ordinator. Traffic impacts during the operational stage would be negligible. Potential impacts on unknown cultural heritage would be mitigated by archaeological monitoring with provision made for resolution of any archaeological features/deposits that may be identified. Landscape and visual impacts will arise but would be balanced to a degree by the nature and characteristics of the

receiving environment including extensive commercial forestry, agricultural uses, the existing Boggeragh Wind Farm (1 and 2) and the nature and characteristics of the various Scenic Routes in the area. Significant visual impacts on Scenic Route S20 can be avoided through the omission of turbines T13 and T17.

- 10.12.2. Notwithstanding the conclusion reached in respect of the inability of the proposed measures to fully mitigate the impact of the proposal on the local landscape and biodiversity, it is considered that the environmental effects would not justify a refusal of planning permission having regard to overall benefits of the proposed development.
- 10.12.3. The EIAR has considered that the main significant direct and indirect effects of the proposed development on the environment would be primarily mitigated by environmental management measures, as appropriate. Thus, having regard to the foregoing assessment, I am, therefore, satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment.

11.0 Appropriate Assessment

11.1. Introduction

- 11.1.1. The observations raise concerns in the context of the Habitats and Birds Directives.
- 11.1.2. The planning application is accompanied by a Report to Inform the Appropriate Assessment Process (Screening and Natura Impact Statement) which was prepared by Fehily Timoney (January 2022). Sections 1 and 2 comprise an introduction and description of the project. Section 3 comprises 'Screening for Appropriate Assessment'. Section 4 comprises the 'Natura Impact Statement'. References are set out in Section 5 and the report is accompanied by a series of appendices, including: habitat map; aquatic ecology; avian ecology; CEMP; Invasive Species Management Plan; Geotechnical and Peat Stability Assessment Report; Biodiversity Enhancement and Management Plan; List of Cumulative Projects and Consideration of Afforestation. The Further Information Response (January 2024) updates aspects of this report.
- 11.1.3. The Board should note that, like the EIAR, the screening report and NIS relate to the proposed wind farm, grid connection, turbine delivery route and the BEMP lands.
- 11.1.4. The screening considers European sites within a 15km buffer of the proposed development in addition to sites beyond with a hydrological or physical connectivity.

- 11.1.5. Having regard to the nature of the proposal, the nature of the receiving environment and the source-pathway-receptor (S-P-R) model, I consider this to be a reasonable potential zone of influence (ZoI). There are 7 no. European sites within this radius (5 no. SPA's and 2 no. SAC's) with further 7 no. (2 no. SPA's and 5 no. SAC's) located outside but also considered in the screening report, due to potential links to the overall project (e.g. due to hydrological connections or sites designated for migratory birds).
- 11.1.6. Having further examined the likely spatial and temporal biophysical changes associated with the project impacts, the applicant's screening determined that the following European sites are within the Zol of the project:
 - Mullaghanish to Musheramore Mountains SPA,
 - Blackwater River (Cork/Waterford) SAC, and
 - The Gearagh SPA.
- 11.1.7. The screening report concluded that:

"There is the possibility that there could be negative effects on the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC, and the Gearagh SPA as a result of indirect effects from the proposed project either alone or in-combination with other plans and projects. In the absence of mitigation measures (which have not been considered at this screening stage), likely significant effects on the qualifying interests of the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC, and The Gearagh SPA cannot be excluded on the basis of objective scientific information. A Stage 2 Appropriate Assessment of the potential impact on the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC, and The Gearagh SPA will therefore be required."

- 11.1.8. The subsequent NIS, contained in Section 4 of the report, outlines the methodology used for assessing potential impacts on the habitats and species within these European sites that have the potential to be affected by the proposed development. It predicts the potential impacts for these sites and their conservation objectives, it suggests mitigation measures, assesses in-combination effects with other plans and projects and it identifies any residual effects on the European sites and their conservation objectives. The NIS was informed by the following studies and surveys:
 - Desk Studies incl. NPWS requests and NBDC database access etc.

- Aquatic Surveys⁴⁵
- Avifauna Surveys⁴⁶
- 11.1.9. I note that the aquatic and bird surveys are similar to those presented in the EIAR.

11.2. Stage 1 – Screening

- 11.2.1. Having reviewed the documents and submissions, I am satisfied that the information allows for a complete examination and identification of any potential significant effects of the proposed development, alone, or in combination with other plans and projects on any of the designated European sites. I have carried out a full screening determination for the development and it is attached to this report (Appendix 1). For completeness, the sites included in the screening exercise are as follows:
 - Mullaghanish to Musheramore Mountains SPA (004162)
 - Blackwater River (Cork/Waterford) SAC (002170)
 - The Gearagh SAC (000108)
 - The Gearagh SPA (004109)
 - Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)
 - Mullaghanish Bog SAC (001890)
 - Lower River Shannon SAC (002165)
 - Curraghchase Woods SAC (000174)
 - Askeaton Fen Complex SAC (002279)
 - Barrigone SAC (000432)
 - River Shannon and River Fergus Estuaries SPA (004077)
 - Cork Harbour SPA (004030)
 - Great Island Channel SAC (001058)

⁴⁵ See Appendix 2 of the NIS.

⁴⁶ See Appendix 3 of the NIS.

- 11.2.2. In accordance with Section 177U(4) of the Planning Act and on the basis of objective information, I conclude that the proposal would have a likely significant effect on the conservation objectives of the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC and The Gearagh SPA through decreased river water quality i.e. the construction and operational phases could potentially affect hydrologically connected riverine habitats that support these European sites Qualifying Interests (QIs) and Species of Conservation Interests (SCIs), (e.g. uncontrolled release of pollutants to ground and surface waters and dewatering etc.).
- 11.2.3. Additionally, there is a potential pathway for indirect effects in the form of disturbance/displacement and direct effect through collision risk to SCI bird species.
- 11.2.4. An appropriate assessment is required on the basis of the effects of the project alone and therefore AA (Stage 2) under Section 177V of the Planning Act 2000, is required.

11.3. Stage 2 – Appropriate Assessment

11.3.1. The following is a summary of the objective scientific assessment of the implications of the proposal on the QI / SCI features of the abovementioned European sites using the best scientific knowledge in the field. All aspects of the proposed development which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are considered and assessed.

Relevant European Sites

- 11.3.2. In the absence of mitigation, potential for significant effects could not be excluded for:
 - Mullaghanish to Musheramore Mountains SPA (Site Code 004162)
 - Blackwater River (Cork/Waterford) SAC (Site Code 002170)
 - The Gearagh SPA (Site Code 004109)
- 11.3.3. A description of the sites, their conservation objectives and QI's or SCI's, including relevant attributes and targets, are set out in the NIS. I have also reviewed the conservation objectives listed for the site on the NPWS website (<u>www.npws.ie</u>).
- 11.3.4. Tables AA1 to AA3 below summarises the information considered for the Appropriate Assessment and the site integrity test. This information has been compiled from the information contained in the NIS as well as information from the NPWS.

Table AA1: Summary Matrix for Mullaghanish to Musheramore Mountains SPA (Site Code 004162)				
		Summary of Appropriate Assessment		
QI / SCI	Conservation Objectives	Potential Adverse Effects	Mitigation Measures	
Hen Harrier (Circus cyaneus)	To restore the favourable	Hen harriers are traditionally associated	None outlined in the NIS as it considers that	
[A082]	conservation condition	with open upland bog/heath habitats as	there is no potential for the project to affect this	
		well as rough/wet grassland and scrub	target species alone or in-combination with	
		(and more recently pre-thicket forestry)	other plans or projects.	
		during the breeding season. Excavations		
		associated with the turbine foundations,		
		hardstanding and access tracks could		
		impact drainage/hydrological functionality		
		of such peatland and heathland adjacent to		
		turbines T2, T3, T13 and T17, and lead to		
		deterioration of habitat quality and		
		potential indirect habitat loss.		
		Given the proximity of the SPA to the wind		
		farm site and the foraging nature of hen		
		harrier, collision/bird strike is also possible		
		which could impact the SPA population.		

Overall Conclusion – Integrity Test

The applicant determined that no potential for adverse effects arose in this case given the absence of any nest sites within 2km of the study site and the low levels of activity at the site – where the proposed turbine locations are not along regular hen harrier flightpaths or any area of preferential use, and where the loss of wet grassland/cutover bog/heath habitat associated with four turbines (T2, T3, T13 and T17) and associated access tracks is considered likely to have

an imperceptible impact. Similarly, no potential for adverse effects is predicted along the grid connection or turbine delivery routes. In terms of disturbance and displacement, the applicant states that no impact on hen harrier nest success is considered likely based on the distance to known nesting sites and on the published research literature available on wind turbine avoidance by hen harriers i.e., sensitivity to displacement is ranked as low medium (Madders & Whitfield, 2006). In terms of collision risk, the applicant states that hen harriers typically fly below the height of wind turbine rotor blade sweep of less than 25m, with this height assessed as the lowest rotor blade sweep height for the range of turbine specifications. In this regard, I note that 79.5% of observations recorded during the breeding season surveys were identified at heights below 25m and 77.5% of observations recorded during the winter season surveys were identified at heights below 25m. In-combination effects were considered in the NIS (section 4.4) by reviewing recent planning applications / consents in the wider area. The NIS determined that potential effects during the operation of the Boggeragh (1 and 2), Esk, Carrigcannon and Carriganimmy wind farms in combination with the proposed project will not occur on the SCI bird species (hen harrier) of the Mullaghanish to Musheramore Mountains SPA. Outside of the adjacent wind farms and Knockglass Solar Farm, recent developments are generally minor in nature. Thus, the NIS states that mitigation measures are not required to ensure that the construction, operation and decommissioning of the proposed development alone or in combination with other plans and projects will not adversely affect the integrity of this European site. I do however note the proposed bird monitoring program (section 4.6.2.2 of the NIS).

Following the appropriate assessment, I am able to ascertain with confidence that the proposed development would not adversely affect the integrity of the Mullaghanish to Musheramore Mountains SPA in view of the conservation objective or integrity of this European site. Whilst I note the indirect impact on the hen harrier through the loss of suitable habitat in the vicinity of turbines T2, T3, T13 and T17, this is minor in the context of the overall Boggeragh Mountains and unlikely to hamper the restoration of the SPA to favourable conservation condition. I am also satisfied that collision risk is very low given the low levels of overflying throughout the survey period and having regard to their typical flight heights and the lowest blade sweep of the range of turbines proposed. For similar reasons, I am also satisfied that the proposed development will not cause displacement by creating a barrier effect and I note that this is more likely to occur to migrating waterfowl populations in any event. Whilst I note that these issues will apply for the adjacent wind farms, in terms of in-combination effects, I am satisfied that no adverse impacts will arise for similar reasons i.e., limited land-take/habitat removal, little overflying and turbine design. Moreover, having regard to the turbine layout, I note that the northern cluster will read as an extension to the Boggeragh Wind Farm (1 and 2) where hen harrier is accustomed to their presence. I am therefore satisfied that there is no potential for in combination effects with the proposed development.

This conclusion is based on a complete assessment of all implications of the project alone and in combination with other plans and projects.

Table AA2: Summary Matrix for Blackwater River (Cork/Waterford) SAC (002170)				
		Summary of Appropriate Assessment		
QI / SCI	Conservation Objectives	Potential Adverse Effects	Mitigation Measures	
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax (Twaite Shad) [1103]	To restore the favourable conservation conditionTo maintain the favourable conservation conditionTo restore the favourable conservation conditionTo maintain the favourable conservation conditionTo maintain the favourable conservation conditionTo maintain the favourable conservation conditionTo restore the favourable conservation conditionTo maintain the favourable conservation conditionTo restore the favourable conservation condition	 Salmon [1106]: In the event of emissions to water (i.e., surface water runoff, suspended solids/nutrients, hydrocarbons etc.), a potential negative effect resulting in a degradation of water quality and habitat heterogeneity of the watercourses within the catchment of the proposed project, thereby reducing the carrying capacity of the watercourses for salmonids in the absence of appropriate mitigation. Otter [1355]: In the event of disturbance/displacement of species 	Mitigation measures are described in section 4.6 of the NIS. Section 4.6.1 relates to mitigation by avoidance and design. Section 4.6.2 / Table 4-9 of the NIS sets out specific measures prescribed to avoid or reduce potential for the proposed project to have an adverse effect on the integrity / conservation objectives of this SAC. These are set out in section 11.4 below.	
Salmo salar (Salmon) [1106] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition To maintain the favourable conservation condition To maintain the favourable conservation condition	Furthermore, in the event of emissions to water (i.e., surface water runoff, suspended solids/nutrients, hydrocarbons etc.), a potential negative effect resulting in potential reduction in fish biomass		

Perennial vegetation of stony	To maintain the favourable	availability may occur in the absence of	
banks [1220]	conservation condition	appropriate mitigation	
Salicornia and other annuals	To maintain the favourable	Floating river vegetation [3260]: In the	
colonising mud and sand	conservation condition	event of emissions to water/Glen River	
[1310]		(i.e., surface water runoff, suspended	
Atlantic salt meadows	To restore the favourable	solids/nutrients, hydrocarbons etc.),	
(Glauco-Puccinellietalia	conservation condition	resulting in a degradation of water quality	
maritimae) [1330]		and habitat heterogeneity due to	
Lutra lutra (Otter) [1355]	To restore the favourable	sedimentation, thereby reducing the	
	conservation condition	quality of the watercourse for this habitat	
Mediterranean salt meadows	To maintain the favourable	type in the absence of appropriate	
(Juncetalia maritimi) [1410]	conservation condition	mitigation.	
Vandenboschia speciose	To maintain the favourable		
Killarney Fern [6985]	conservation condition		
Water courses of plain to	To maintain the favourable		
montane levels with the	conservation condition		
Ranunculion fluitantis and			
Callitricho-Batrachion			
vegetation [3260]			
Old sessile oak woods with	To restore the favourable		
Ilex and Blechnum in the	conservation condition		
British Isles [91A0]			
*Alluvial forests with Alnus	To restore the favourable	1	
glutinosa and Fraxinus	conservation condition		
excelsior (Alno-Padion,			

Alnion incanae, Salicion	
albae) [91E0]	
*Taxus baccata woods of the	Under review at the time of
British Isles [91J0]	publication of the Conservation
	Objectives Series (July 2012)
	and since removed under S.I.
	No. 452/2024 (Sept. 2024).

Overall Conclusion – Integrity Test

The applicant determined that following the implementation of mitigation measures, the construction and operation of the proposed development alone or in combination with other plans and projects will not adversely affect the integrity of this European site. I note that the NIS excludes the possibility of potential adverse effects on freshwater pearl mussel or white-clawed crayfish. This is a reasonable approach given their absence in the aquatic surveys and the fact that neither species is present in the Blackwater [Munster] sub-catchments of the proposed project.

I have reviewed the mitigation measures proposed for the subject development and I am satisfied that impacts from the development in terms of pollution from surface water runoff or groundwater containing silt, sediment, hydrocarbons or other pollutants would be unlikely following the implementation of the mitigation measures proposed. In this regard, I consider that the mitigation measures proposed generally comprise relatively standard good practice measures for large-scale construction projects and for construction works in the vicinity of watercourses. I consider that the proposed measures, as well as the detailed construction methodology and further management plans contained within the CEMP (refer to NIS Appendix 4) are suitably detailed to remove any lack of clarity regarding potential adverse effects and that they are capable of being successfully implemented. I note that it is also proposed to appoint both an Ecological Clerk of Works and an Environmental Manager to ensure that the mitigation measures and best practice measures are fully implemented.

In-combination effects were considered in the NIS (section 4.4), and I am satisfied that there is no potential for such effects.

Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the proposed development would not adversely affect the integrity of the Blackwater River (Cork/Waterford) SAC in view of the conservation objectives of this site.

This conclusion has been based on a complete assessment of all implications of the project alone and in combination with other plans and projects.

Table AA3: Summary Matrix for The Gearagh SPA (004109)				
		Summary of Appropriate Assessment		
QI / SCI	Conservation Objectives	Potential Adverse Effects	Mitigation Measures	
Wigeon (Anas penelope)	To maintain or restore the	Mallards are traditionally associated with	None outlined in the NIS as it considers that	
[A050]	favourable conservation	lakes and wetlands as opposed to open	there is no potential for the project to affect this	
	condition of this bird species	upland bog/heath habitats, but the wind	target species alone or in-combination with	
	and wetland habitat at SPA	farm site is within their core foraging range	other plans or projects.	
Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos)	To maintain or restore the favourable conservation condition of this bird species and wetland habitat at SPA To maintain or restore the favourable conservation	(15km) and potential adverse effects may arise from the loss of supporting terrestrial habitat and particularly the pollution of aquatic habitat in the event of emissions to water (i.e., surface water runoff, suspended solids/nutrients, hydrocarbons		
	condition of this bird species and wetland habitat at SPA	foraging is also a potential adverse effect.		
Coot (Fulica atra) [A125]	To maintain or restore the favourable conservation condition of this bird species and wetland habitat at SPA			
Wetland and Waterbirds	To maintain or restore the favourable conservation			
[,,,,,,,,]				

condition of this bird s	pecies	
and wetland habitat a	SPA	

Overall Conclusion – Integrity Test

The applicant determined that no potential for adverse effects arose in this case given the infrequent observations at the site and lack of suitable habitat i.e., lakes and wetlands. Therefore, the implementation of mitigation measures is not required to ensure that the construction, operation and decommissioning of the proposed development alone or in combination with other plans and projects will not adversely affect the integrity of this European site.

In-combination effects are considered in the NIS (section 4.4), and I am satisfied that there is no potential for such effects.

Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the proposed development would not adversely affect the integrity of The Gearagh SPA in view of the conservation objectives of this site. Whilst the wind farm site is within their core foraging range, mallard was infrequently observed in very low numbers (<5 individuals, typically 1-2 at any one time) and the NIS states that the study area does not support foraging, loafing or roosting features of significance for this species due to the absence of suitable habitats (e.g., wetlands, lakes). I agree with this statement following my site inspection. In this regard, I consider that the potential impact to the mallard species will be negligible and will not affect their conservation status. The species confirmed or expected on or near the study area are anticipated to persist during the lifetime of the proposed project.

This conclusion has been based on a complete assessment of all implications of the project alone and in combination with other plans and projects.
11.4. Mitigation Measures

- 11.4.1. The mitigation measures are set out in Section 4.6 of the NIS and include the following.
- 11.4.2. Mitigation by avoidance and design (Section 4.6.1):
 - Hardstanding kept to the minimum necessary to minimise land take of habitats and flora.
 - Site design and layout deliberately avoided direct impacts on designated sites.
 - Cabling to be placed underground, significantly reducing collision risk to birds and under roads where possible to avoid impacts to roadside vegetation.
 - Grid connection routes selected to minimise land take of potentially sensitive habitats by following the site access tracks and public roads as much as possible.
 - Buffers maintained between wind farm infrastructure and hydrological features such as rivers and streams, with the exception of crossings, access track and cabling works.
- 11.4.3. Mitigation measures prior to construction (Section 4.6.2 / Table 4-9) include:
 - Implementation of Construction and Environmental Management Plan (CEMP).
 - Appointment of a Project Ecologist/Ecological Clerk of Works (ECoW) and an Environmental Manager.
 - Communication with IFI.
 - Water monitoring.
 - Invasive species: Eradication prior to construction in accordance with the Invasive Species Management Plan (ISMP).
 - Silt traps and silt fencing to slow water flow, increase residence time, and allow settling of silt in a controlled manner.
 - Settlement ponds, as detailed in the Surface Water Management Plan.
- 11.4.4. Construction phase mitigation measures (Section 4.6.2 / Table 4-9) include:
 - Restricted works areas by demarcation and extent, with site access limited to stated areas and storage of machinery and equipment in site compounds.

- Daylight construction hours, maintenance of a wildlife register, appropriate management of construction compound and substation lighting, appropriate disposal of wastes (edible and putrescible), tree felling outside bird breeding season (March 1st August 31st) with contingency where not possible, standard monitoring surveys as per SNH (2017) guidance with contingency in the event that a nest is discovered i.e., species specific buffer until birds have fledged.
- Lighting: Construction during daylight hours to minimise disturbances to active nocturnal species. Limited operations such as concrete pours, turbine erection etc. require night-time operating hours and BCT guidance note 08/18 will be implemented when determining appropriate lighting for these works.
- Toolbox talks to minimise disturbance to key species during construction.
- Plant and vehicles: Inspections each day prior to use; defective plant shall not be used until the defect is satisfactorily fixed; all major repair and maintenance operations will take place off site.
- Pollution incident control response: Training of personnel; Emergency Response Plan outlining the spillage response procedure and a contingency plan to contain silt; regular review of weather forecasts of heavy rainfall; records kept of daily visual inspections of drains, silt ponds, etc on site and weekly inspections of streams which receive flows from the main wind farm site.
- Buffer zone of 50m to be maintained for all watercourses with the exception of existing road upgrades and stream crossings. Felling buffer zone of 15-20m along the edge of all aquatic zones for machinery associated with tree felling i.e., trees can be felled by long arm machinery outside exclusion zone or by chainsaw within. A three-stage treatment train (swale settlement pond diffuse outflow) to retain and treat the discharges from all hard surface areas. Settlement ponds to be cleared regularly and material prevented from entering the drainage network which will reduce the risk of sediment runoff or pollutants reaching catchment waterways thus avoiding adverse effects on the SAC.
- Tree felling will be the subject of a felling license and to the conditions of such a license which will be in place prior to works commencing. Clearance method to ensure the potential for sediment and nutrient run-off is reduced.

- Tree felling schedule: Buffer zone of 15-20m. Silt fences within drainage channels and maintained throughout felling works. Suspend timber extraction where rutting starts to occur. Felling in spring to facilitate the sowing of grass seeds post-harvest to aid sediment filtration and nutrient absorption. Restrictions on machine operations before, during and after heavy rainfall. Removal of debris and brash from within 20m of drains. Use of brash mats to support vehicles on soft ground and monitored for renewal.
- Track widening using clean uncrushable stone with a minimum of fines (reduces the risk of suspended solid release). Still traps placed in roadside swales. New tracks drained via roadside swales with stilling ponds at the end of the swale. Grassed swales will serve to detain flow and reduce the velocities of surface water flows and constructed in accordance with CIRIA C698 (Site Handbook for the Construction of SuDS) which can be used in conjunction with CIRIA C753 (The SuDS Manual). Check dams provided where roadside drains are laid at slopes >2°. Site drainage, including silt traps and settlement ponds, put in place in parallel with, or ahead of, construction, such that excavation for new infrastructure will have functional drainage system in place. Settlement ponds will remain in place during construction phase and drain diffusely overland, over existing vegetated areas, within the site boundary. Tracks will be capped as soon as practicably possible to cover exposed subsoils and as such reduce the concentration of suspended solids in the run-off.
- Silt Protection Controls (SPCs), consisting of a minimum of silt traps containing filter stone and filter material staked across the width of the swales and upstream of the outfall to any watercourse, are proposed at the location of the drain crossings. Drains around hard-standing areas will be shallow to minimise the disturbance to sub-soils. Permanent roadside drainage, including the use of interceptor drains, swales, check dams and stilling ponds, will be installed. Site drainage, including silt traps and stilling ponds, will be put in place in parallel with or ahead of construction, such that excavation for new infrastructure will have functional drainage system in place. The stilling ponds will drain diffusely overland, over existing vegetated areas, within the site boundary. The stilling ponds will be back-filled and the swales that were

connected to them will be re-connected to the outfall once construction is completed. Routes for the proposed access tracks to follow existing tracks.

- Wheel wash facilities at Access Points 1 and 2, which will be self-contained.
- Concrete: Timing of concrete pours to occur outside periods where heavy rainfall would be expected; regular review of weather forecasts; delivery truck chute washing only to a designated area with a settlement lagoon; concrete will be kept out of watercourses and drains.
- Hydrocarbon management: Storage in bunded storage tanks (bunds with 110% volume); careful handling to avoid spillages, immediate containment of spillages with any contaminated soil removed from the site and properly disposed of; waste oils/hydraulic fluids will be collected in leak-proof containers and removed from the site; spill control equipment will be kept within the refuelling areas and in each item of plant.
- Refuelling: plant and bowser refuelling will be carried out at designated refuelling station within site compound and mobile double-skinned bowser will carry out refuelling in designated areas greater than 100m from watercourses; drip trays and spill kits will be kept available.
- Spill control: Appropriate equipment, such as oil soakage pads, will be kept within the construction area and in each item of plant to deal with any accidental spillage. All staff will be trained in appropriate spill control measures.
- Welfare utilities: Portaloo's and/or containerised toilets and welfare units will be used to provide toilet facilities for site personnel and waste will be removed from site via a licensed waste disposal contractor.
- Drainage: Duct installation during dry periods; environmental supervision; standing water arising during excavations pumped into the site drainage system; where space for drainage infrastructure or suitable treatment measures is not available (e.g. during grid cable installation) excess water from excavations will be removed by tanker for disposal at licensed facility; suitably sized cross-drains provided to prevent a risk of clogging to crossings conveying flows from agricultural/forestry drains across the access roads.

- Flooding: Settlement ponds provided together with swales to reduce velocities in the surface water runoff from access tracks and hardstanding and provide retention for 1 in 100 year events with climate change allowance. No personnel on site during extreme flood events.
- Excavated material: re-used on-site for berms etc. with surplus material removed to an appropriately licensed facility; borrow pits will be reinstated with excavated peat and spoil; setback distance of at least 100m from watercourses when storing temporary spoil; spoil heaps will be compacted and covered to minimise sediment-laden runoff and no spoil stockpiles will be left on site after construction; stockpiles of sand/stone and other materials will be covered with sheeting when not in use to prevent washout of fines.
- Contaminated material will be handled, removed and disposed of in accordance with statutory requirements. Such material will be left in-situ and covered, where possible, until such time as Waste Acceptance Criteria testing is undertaken inline with the acceptance criteria to a suitably licenced landfill or treatment facility.
- Traffic will adhere to the traffic management plan.
- 11.4.5. Operational phase mitigation measures (Section 4.6.2 / Table 4-9) include:
 - Quarterly inspections of the erosion and sediment control measures (i.e. drains, swales, outfalls to field drains) for the first year following construction and annually thereafter.
 - Management of hydrocarbons as per the construction phase measures.
 - Continued treatment of invasive species according to the ISMP for as long as they persist within the site.
 - Illumination of turbines with medium intensity fixed red obstacle lights, fitted with baffles to ensure light is not discernible from ground.
 - Maintenance of vegetation-free buffer zones around all turbines via mechanical means only.
- 11.4.6. Decommissioning phase mitigation measures:
 - As per 'prior to' and 'construction phase' mitigation measures.

Appropriate Assessment Conclusion

- 11.4.7. In screening the need for appropriate assessment, it was determined that the proposed development had the potential to result in significant effects on the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC and The Gearagh SPA and that appropriate assessment was required in view of the conservation objectives of those European sites.
- 11.4.8. Following a detailed examination and evaluation of the NIS, all associated material submitted with the planning application as relevant to the appropriate assessment process, and taking into account the various submissions, I am satisfied that the design of the proposed development, combined with the proposed mitigation measures to address impacts from surface water runoff and degradation of water quality during the construction and operational phase would prevent adverse effects on the integrity of Blackwater River (Cork/Waterford) SAC. No adverse effects were found in relation to Mullaghanish to Musheramore Mountains and The Gearagh SPA's.
- 11.4.9. This conclusion is based on:
 - Detailed assessment of all aspects of the proposed development that could result in significant effects or adverse effects on European sites within a zone of influence of the application site.
 - Consideration of the conservation objectives and conservation status of Qualifying
 Interest / Special Conservation Interest habitats and species.
 - Application of mitigation measures designed to avoid adverse effects on site integrity and likely effectiveness of same.
 - Consideration and assessment of in-combination effects with other plans and projects, including those specifically referred to by the appellant.
- 11.4.10. I therefore conclude that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of any European sites, in view of those site's conservation objectives. No reasonable scientific doubt remains as to the absence of adverse effects on the integrity of these European sites.

12.0 **Recommendation**

12.1. I recommend that permission for the development as proposed is approved, subject to the conditions recommended below.

13.0 Reasons and Considerations

In coming to its decision, the Board was consistent with the following:

- Climate Action and Low Carbon Development Act 2015, as amended, and
- Climate Action Plan 2024

And, in coming to its decision, the Board had regard to the following:

- European legislation, including of particular relevance:
 - Directive 92/43/EEC (Habitats Directive) and Directive 79/409/EEC as amended by 2009/147/EC (Birds Directives) which set the requirements for Conservation of Natural Habitats and of Wild Fauna and Flora throughout the European Union.
 - EU Renewable Energy Directive 2009/28/EC which aims to promote the use of renewable energy and amending Directive EU/2023/2413 which aims to speed up the EU's clean energy transition.
- National and regional planning and related policy, including:
 - National policy with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases,
 - the provisions of the Wind Energy Development Guidelines Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June, 2006,
- Regional and local level policy, including the:
 - Regional Spatial Economic Strategy for the Southern Region
 - Cork County Development Plan 2022-2028
- other relevant national policy and guidance documents,

- the nature, scale and design of the proposed development as set out in the planning application and the pattern of development in the vicinity,
- the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development and the likely significant effects of the proposed development on European sites.
- the submissions made to An Bord Pleanála in connection with the planning application and the submissions made to the further information response.
- the report and recommendation of the Inspector, including the examination, analysis and evaluation undertaken in relation to appropriate assessment and environmental impact assessment.

13.1. **Proper Planning and Sustainable Development**

It is considered that the proposed development would accord with European, national, regional and local planning policy provision and that it is acceptable in respect of its likely effects on the environment and its likely consequences for the proper planning and sustainable development of the area.

13.2. Environmental Impact Assessment

The Board considered that the Environmental Impact Assessment Report, supported by the documentation submitted by the applicant, provided information which is reasonable and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the proposed development on the environment, taking into account current knowledge and methods of assessment. The Board is satisfied that the information contained in the Environmental Impact Assessment Report is up to date and complies with the provisions of EU Directive 2014/52/EU amending Directive 2011/92/EU. The Board considered that the main significant direct and indirect effects of the proposed development on the environment are those arising from the impacts listed below.

The main significant effects, both positive and negative, are:

• **Population and Human Health:** Potential significant positive impacts on the socio-economic profile of the area due to community funding and investment; potential significant health and safety impacts during construction, operation and

decommissioning that will be mitigated through the implementation of the measures set out in the EIAR, including the Construction Environmental Management Plan, best practice construction methods, appropriate training, installation of shadow flicker and ice detection systems on turbines, remote monitoring and scheduled maintenance.

- Biodiversity: Potential significant effects on habitats, mammals, bats, birds and aquatic ecology in the construction phase and operational phase which would be mitigated by the implementation of the mitigation measures contained in the Environmental Impact Assessment Report, including the Construction Environmental Management Plan, good practice construction measures, timing of vegetation removal, water pollution prevention measures, provision of bird/bat boxes, use of buffer zones, biosecurity measures and the appointment of an Ecological Clerk of Works and Environmental Manager. Further precommencement biodiversity surveys are also proposed. Significant impacts on areas of Annex I European Dry Heath [4030], which is suitable foraging habitat for hen harrier, can be avoided through the omission of turbines T2, T3, T13 and T17.
- Land, Soils, Water, Air and Climate: Potential significant effects on hydrology, hydrogeology and soils would be mitigated by a series of best practice construction management and pollution prevention measures and other specific measures outlined in the EIAR, including the Construction Environmental Management Plan, surface water management plan, use of buffer zones, erosion control and pollution prevention measures, and appointment of an Environmental Manager. Positive air quality and climate impacts are identified for the operational phase due to the offsetting of fossil fuels by the generation of renewable energy. Construction noise will be mitigated by the measures outlined in the CEMP, while cumulative operational noise with the Boggeragh Wind Farm (1 and 2) will be mitigated by curtailment of turbine operation, if required. Significant impacts from landslide/peat slippage can be avoided through the omission of turbines T3, T13 and T17.
- Material Assets, Cultural Heritage and the Landscape: Potential positive impacts on material assets due to the provision of new and upgraded recreational walking trails. Traffic impacts will be short-term and temporary and will be mitigated during construction by the measures set out in the EIAR, including the CEMP, Traffic Management Plan and appointment of a Traffic Management Co-

Ordinator. Traffic impacts during the operational stage would be negligible. Potential impacts on unknown cultural heritage would be mitigated by archaeological monitoring with provision made for resolution of any archaeological features/deposits that may be identified. Landscape and visual impacts will arise but would be balanced to a degree by the nature and characteristics of the receiving environment including extensive commercial forestry, agricultural uses, the existing Boggeragh Wind Farm (1 and 2) and the nature and characteristics of the various Scenic Routes in the area. Significant visual impacts on Scenic Route S20 can be avoided through the omission of turbines T13 and T17.

Having regard to the above, the Board is satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment. The Board is satisfied that the reasoned conclusion is up to date at the time of making the decision.

13.3. Appropriate Assessment

The Board agreed with and adopted the screening assessment and conclusion carried out in the inspector's report that Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC and The Gearagh SPA are the European sites for which there is a likelihood of significant effects.

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposal for the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC and The Gearagh SPA, in view of the sites' conservation objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment.

In completing the assessment, the Board considered, in particular, the

- Likely direct and indirect impacts arising from the proposal both individually or in combination with other plans or projects, specifically upon the Mullaghanish to Musheramore Mountains SPA, Blackwater River (Cork/Waterford) SAC and The Gearagh SPA,
- ii. Mitigation measures which are included as part of the current proposal,
- iii. Conservation objectives for these European Sites, and

iv. Views of prescribed bodies in this regard.

In completing the appropriate assessment, the Board accepted and adopted the appropriate assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the integrity of the aforementioned European sites, having regard to the site's 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 site's conservation objectives.

14.0 **Conditions**

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, as amended by the further information response received by An Bord Pleanála on the 15th day of January 2024, 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 development shall be carried out and completed in accordance with the agreed particulars.

Reason: In the interest of clarity.

2. Turbines referenced as T2, T3, T13 and T17, together with associated hardstands and access tracks, shall be omitted from the development hereby permitted.

For clarity, the permitted wind farm shall relate to sixteen wind turbines only.

Revised drawings showing compliance with these requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

Reason: In the interest of biodiversity.

3. The period during which the development hereby permitted is constructed shall be 10 years from the date of this order.

Reason: In the interests of clarity.

4. 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 its operation in the light of the circumstances then prevailing.

5. The mitigation and monitoring measures contained in the submitted Environmental Impact Assessment Report (EIAR), shall be implemented.

Reason: To protect the environment.

6. The mitigation and monitoring measures contained in the submitted Natura Impact Statement (NIS), shall be implemented.

Reason: To protect the integrity of European sites.

- 7. The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed:
 - (a) Between the hours of 7am and 11pm:
 - the greater of 5 dB(A) L_{90,10min} above background noise levels, or 45 dB(A) L_{90,10min}, at standardised 10m height above ground level wind speeds of 7m/s or greater
 - 40 dB(A) L_{90,10min} at all other standardised 10m height above ground level wind speeds
 - (b) 43 dB(A) $L_{90,10min}$ 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 derating 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 Recommendations 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 commissioning of the wind farm.

Reason: In the interest of residential amenity.

8. Prior to the commencement of development, the applicant shall submit to and agree in writing with the planning authority, details of an obstacle warning light scheme which can be visible to night vision equipment.

Reason: In the interest of aviation safety.

9. The construction of the development shall be managed in accordance with a Construction Environment Management Plan, which shall be submitted to, and agreed in writing with the planning authority prior to commencement of development. This plan shall provide details of intended construction practice for the development, including, but not limited to, hours of working, noise management measures, surface water management measures (including weekly water sampling), and off-site disposal of construction/demolition waste.

Reason: In the interests of public safety and residential amenity.

10. Water supply, wastewater treatment and surface water attenuation and disposal shall comply with the requirements of the planning authority for such works and services. Prior to the commencement of development, the developer shall submit details for the disposal of surface water from the site (including drainage monitoring/maintenance), for the written agreement of the planning authority, following consultation with Inland Fisheries Ireland.

Reason: In the interest of public health and to prevent flooding and in the interests of sustainable drainage and biodiversity.

- 11. The following design requirements shall be complied with:
 - (a) The wind turbines including masts and blades, and the wind monitoring mast, shall be finished externally in a light grey colour.
 - (b) Cables within the site shall be laid 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 be affixed to any structure on the site without a prior grant of planning permission.

Reason: In the interest of visual amenity.

12. The delivery of large-scale turbine components for the construction of the wind farm shall be managed in accordance with a Construction Traffic Management Plan (CTMP), which shall be submitted to, and agreed in writing with the planning authority prior to commencement of development. This plan shall provide details of the road network to be used by construction traffic, including over-sized loads, detailed proposals for 'Access Point' sightlines (including those to be retained after the construction phase), and detailed arrangements for the protection of bridges, culverts or other structures to be traversed, as may be required. The plan should also contain details of how the developer intends to engage with and notify the local community in advance of the delivery of oversized loads.

Reason: In the interests of public safety and residential amenity.

13. On full or partial decommissioning of the turbines or if the turbines cease operation for a period of more than one year, the mast and the turbine concerned shall be removed and all decommissioned structures shall be removed, and foundations covered with soil to facilitate re-vegetation, within three months of decommissioning.

Reason: To ensure satisfactory reinstatement of the site upon cessation of the project.

14. 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 interest of protecting telecommunications signals and of residential amenity.

15. Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to 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 wind monitoring masts and shall notify the Irish Aviation

Authority of intention to commence crane operations with at least 30 days prior notification of their erection.

Reason: In the interest of air traffic safety.

16. The developer shall ensure that all plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.

Reason: In the interest of the proper planning and sustainable development of the area.

17. The developer shall retain the services of a suitably qualified and experienced ecologist to undertake pre-construction surveys at the various project elements, including any river crossings, immediately prior to commencing work in order to check for the presence of protected species in the vicinity.

Reason: In the interest of protecting ecology and wildlife in the area.

18. The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate annual bird surveys of this site. Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Housing, Local Government and Heritage.

Reason: To ensure appropriate monitoring of the impact of the development on the avifauna of the area.

19. (a) The Biodiversity Enhancement Management Plan (BEMP) shall be implemented in accordance with the commitments outlined therein for a period of at least fifteen years following first commissioning of the wind farm hereby permitted. Prior to commencement of development, the applicant shall enter into a written agreement with the planning authority under Section 47 of the Planning and Development Act, 2000 to this effect.

(b) Further details relating to the commitments provided in the BEMP and the timeline for the delivery of individual prescriptions shall be submitted and agreed

with the planning authority prior to commencement of development. This shall include, but is not limited to:

- i. A monitoring programme established in line with the avifauna monitoring program contained in the NIS, auditing and review of management area prescriptions (every 5 years).
- Annual bird surveys in accordance with Condition 18 (above), to establish presence and abundance of bird species including possible prey species.
- iii. In addition to the habitat management described in the BEMP, a detailed habitat evaluation programme shall be established based on the parameters for open habitats as set out in Chapter 3 of the Conservation Objectives Supporting Document for hen harrier (NPWS, 2022) to ensure that habitat management measures achieve their aim.
- iv. Results of monitoring shall be submitted to Cork County Council and to the NPWS.

(c) Within six months prior to the expiry of the Section 47 planning agreement mentioned in paragraph (a), the applicant shall provide details in relation to BEMP lands for the remainder of the duration of the permission. The details provided shall be commensurate in area to those contained within the BEMP submitted with the application and subject to the provisions of paragraph (b). The applicant shall enter into a further written agreement with the planning authority under Section 47 of the Planning and Development Act, 2000 to this effect prior to expiry of the initial agreement mentioned in paragraph (a).

This condition shall not affect the sale of land or buildings by a mortgagee in possession or the occupation of such land or buildings by any person deriving title from such a sale.

Reason: In the interests of biodiversity.

20. The developer shall facilitate the preservation, recording and protection of archaeological materials or features that may exist 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 operation (including hydrological and geotechnical investigations) relating to the proposed development,
- (b) Employ a suitably-qualified archaeologist who shall monitor all site investigations and other excavation works, and
- (c) Provide arrangements, acceptable to the planning authority, for the recording and for the removal of any archaeological material which the authority considers appropriate to remove.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.

21. Prior to the commencement of any works within the curtilage of Drishane Castle, a protected structure (RPS ref. 00319), the applicant/developer shall submit, for written agreement of the planning authority, a specification and method statement covering all development to be carried out, including works to facilitate sightlines at the junction of the R583 and L95831-1, to ensure the development is carried out in accordance with good conservation practice.

Reason: In the interest of the protection of architectural heritage.

22. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the 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 planning authority to apply such security or part thereof to the satisfactory reinstatement of the public road. 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 Pleanála for determination.

Reason: In the interest of traffic safety and the proper planning and sustainable development of the area.

23. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other 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. 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 Pleanála for determination.

Reason: In the interest of orderly development and visual amenity and to ensure satisfactory reinstatement of the site.

24. 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 developer or, in default of such agreement, the matter shall be referred to the Board 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 this permission.

25. The Community Benefit Fund shall be adhered to for the life of the wind farm. The fund shall be administered in accordance with the RESS Community Benefit Fund Good Practice Principles, 2021, prepared by the Department of the Environment, Climate and Communications.

Reason: To ensure that the community living in proximity to the wind farm, benefits from it.

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

Philip Maguire Senior Planning Inspector 8th November 2024

Appendix 1

Screening the need for Appropriate Assessment Finding of likely significant effects

Appropriate Assessment: Screening Determination (Stage 1, Article 6(3) of Habitats Directive)

Compliance with Article 6(3) of the Habitats Directive

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

I have considered the proposed development in light of the requirements of S. 177U of the Planning and Development Act 2000, as amended. A screening report has been prepared by Fehily Timoney (January 2022) on behalf of the applicant and the objective information presented in that report informs this screening determination.

Description of the Proposed Development

It is proposed to construct a 20-turbine wind farm development with 110kV electrical substation and all related site works and ancillary development.

A detailed description of the proposed development is provided in section 3 of the Inspector's Report (IR). As noted, there are four elements to consider:

- the wind farm site,
- the grid connection route,
- the turbine delivery route (TDR), and
- the BEMP lands.

Detailed specifications of the proposal are provided in the 'Report to Inform the Appropriate Assessment Process (Screening and Natura Impact Statement) (Fehily Timoney, January 2022) and other planning documents, including the EIAR.

Consultations and Submissions

As noted, Addendum 5 to the planning application form lists the prescribed bodies notified by the applicant in addition to the local authority, Cork County Council.

I am satisfied that the consultation and submissions have been carried out in accordance with Section 37E(3) of the Planning Act and subsequent to the preapplication consultation advice issued by the Board (ABP-306948-20).

In this regard, I accept that the applicant notified relevant nature conservation bodies. I specifically note a copy of the letter issued to the Department for Housing, Local Government and Heritage (DHLGH) Development Applications Unit (DAU).

The comments from the local authority and the prescribed bodies are summarised in sections 4.1 and 4.2 of the IR. The observer's comments, 5 no. in total, are summarised in section 4.3 of the IR. The submissions on the further information received on 15th January 2024, 3 no., are summarised in section 4.5 of the IR.

As noted, the DHLGH-DAU have not directly commented. Their scoping stage comments generally relate to the proximity of the site to the Mullaghanish to Musheramore SPA and Blackwater River SAC. Specific concerns relate to the hen harrier and the suitability of habitat near turbines T2, T12 and T16 of the 'scoped scheme' (proximate to T2, T13 and T17 of the proposed development). Other protected bird species noted, include merlin, peregrine falcon, barn owl, curlew and golden plover. Geotechnical risks (soil slippage), siltation and increase in hydrographic peaks in the downstream SAC contributing watercourses were also raised. Other protected riverine species, including freshwater pearl mussel, salmon, lamprey and otter were also noted in addition to the Kerry slug and marsh fritillary.

As noted, the applicant's further information response attempted to address the issues raised by Cork County Council but their concerns in relation to habitat loss and birds, including hen harrier and golden plover, remain. I specifically note:

- Recommendation for 4 no. turbines (T2, T3, T13 and T17) to be omitted suggests they are contrary to Objectives ET 13-7 and BE 15-2 of the Development Plan and the pre-app advice to avoid impacts to habitats of high ecological value, and having regard to the extent of loss, degradation and fragmentation of upland habitats / habitats of high biodiversity value in the area.
- Suggests that the Board should consider in-combination and cumulative effects including other SID development in the wider area on upland habitat of high biodiversity value such as Gortyrahilly Wind Farm.
- Suggests that the Board should have regard to the *Threat Response Plan* and national survey findings for hen harrier, which were not previously available.

- Disagrees with applicant's ecologist that the development will not impact on golden plover and continues to be concerned about the likely effects on this red-listed species of conservation concern. 54% decline over a 23-year period.
- Asks the Board to have regard to Article 4(4) of the Birds Directive and Article 10 of the Habitats Directive in respect of species such as hen harrier and golden plover given the loss, fragmentation and alteration of habitat utilised by these species in the wider environment.
- Asks the Board to impose a condition requiring a detailed post-construction Ornithological Monitoring and Mitigation Plan, in addition to other specific conditions. This should include monitoring and surveys for the lifetime of the project, fatality monitoring, fluid mitigation response and updating of monitoring, and implementation of a curtailment programme in the event that large number of species of conservation concern are traversing/utilising the site.

European Sites

Table 2-5 of the document containing the screening report outlines the potential impacts of the proposal in terms of construction (wind farm site, grid connection, TDR and BEMP), operation and decommissioning, and project features, including:

- Size and scale/ land-take / overall affected area
- Physical changes to environment / change in existing environmental pressures
- Resource requirements
- Emissions air (dust), noise, water pollution, waste
- Transport requirements
- Duration of construction, operation, decommissioning
- In-combination

These features and potential impacts helped define the 'likely Zone of Influence'.

A total of 14 no. European sites were identified by the applicant as being located within a 'potential Zone of Influence' (ZoI) of the proposed development / project.

The proposed wind farm site boundary comes within 360m of the Mullaghanish to Musheramore Mountains SPA. It is a similar distance from the grid connection although I note that this distance is stated as "0.0km" in the screening report (Table 3-1). The Blackwater River SAC is c. 3.4km northeast of the site boundary at its closest point, and tributaries of the River Blackwater can be found in the Boggeragh Mountains range, near the northeastern boundary. I also note that the TDR is partly located within/overlaps this SAC at TDR-POI-43 and TDR-POI-44 along the L1123 ('the Butter Road'). It is entirely reasonable to include these European sites within the ZoI having regard to their QIs / SCIs and the potential impacts (Table 2-5).

Other sites identified in the screening report are suggested as relevant to include for the purposes of initial screening for the requirement for Stage 2 AA on the basis of likely significant effects, although this may be perceived as demonstrating an abundance of caution. For example, Cork Harbour SPA, east of Cork City, is c. 34km from the grid connection point at Clashavoon, c. 36km from the wind farm site boundary and some 60km downstream, via the River Laney and the River Lee.

However, having regard to the information and submissions available; the nature, size and location of the proposal; its likely direct, indirect and cumulative effects; the source-pathway-receptor model; and the sensitivities of the ecological receptors, I accept that the 14 no. identified sites are relevant to include for the purposes of initial screening for the requirement for Stage 2 AA on the basis of likely significant effects.

Whilst half of these sites (7 no.) are a distance of more than 15km from nearest relevant turbine, including Cork Harbour SPA, as noted above, I do accept that there is an ecological justification for such a wide consideration of sites, albeit at the upper end of conservative, but representative of the precautionary principle, nonetheless.

For example, I am cognisant of Woodward *et al.* (2019)⁴⁷, who give the maximum foraging radius for the cormorant as 35km from a breeding colony whereas the applicant refers to SNH (2016)⁴⁸ and Johnson *et al* (2014)⁴⁹ for authority on respective foraging ranges. The Board should therefore be mindful of the referenced material but overall, I am willing to accept that it represents best scientific knowledge.

SCI Birds

In general, SCI species have potential to occur in the environs of the proposed development / project site given the foraging and migratory ranges. SCI bird species are susceptible to habitat loss, noise and human presence during the construction stage and susceptible to collision risk with wind turbines towers, blades (moving or stationary) and the barrier effect to regular movements during the operational phase.

Notwithstanding the noted revisions to foraging distances for some SCI species, including the cormorant, I am satisfied that the screening report took a precautionary approach based on the published data available e.g., most foraging trips for cormorant are confined to within 10km of a breeding colony and the maximum range for golden plover is considered to be 11km. Thus, notwithstanding the local authority's concerns regarding the impact of the proposal on golden plover, for which

⁴⁷ Woodward, I., Thaxter, C. B., Owen, E., & Cook, A. S. C. P. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. BTO Research Report No. 724.

⁴⁸ Scottish Natural Heritage (2016). Assessing Connectivity with Special Protection Areas (SPAs). Version 3. Scottish Natural Heritage, UK.

⁴⁹ Johnson, W. P., P. M. Schmidt, and D. P. Taylor. (2014). Foraging flight distances of wintering ducks and geese: a review. Avian Conservation and Ecology 9(2): 2.

notable wintering populations appear at the site, there is insufficient evidence to warrant the inclusion of any other SPAs designated for golden plover or indeed any other SCI bird species on the basis that the wind farm site is within foraging distance.

That said, and for the reasons outlined in section 10.7 of the IR, I am not inclined to agree with the applicant that the habitat impacted by the proposed turbines T2, T3, T13 and T17 and associated hardstanding does not provide suitable foraging habitat or roosting habitat for certain SCI bird species, including the golden plover and hen harrier, but this does not have any bearing on the foraging distances of such species.

With relatively little overflying and not significant numbers of other SCI species that fly at similar heights to the proposed turbines, there is no evidence to suggest a population level collision risk or barrier to migration. In this regard, whilst I note the observer's concerns in relation to the flight paths of migrating birds, such as wild geese, and NPWS scoping comments regarding merlin, peregrine falcon etc., I do not consider it appropriate to include further SPA sites, other than those identified.

QI Habitats / Species

The terrestrial surveys undertaken by the applicant at appropriate season and frequency, using best practice survey methods have identified Annex I habitat within the study area i.e., Northern Atlantic wet heaths with *Erica tetralix* (4010) and European dry heath (4030). An eroding upland stream (FW1), which the applicant states may correspond to the Annex I habitat 'Watercourses of plain to montane levels with the *Ranunculion fluitantis and Callitricho-Batrachion* vegetation (3260)', was also identified, but it has not been illustrated on the Habitat Map (Appendix 1).

In addition to the above floating river vegetation, the aquatic ecology surveys undertaken by the applicant at appropriate season and frequency, using best practice survey methods, indicates that the study area can support populations of Annex II Atlantic salmon and lamprey, although no freshwater pearl mussel, whiteclawed crayfish or otter were recorded. No other habitats or species of relevance to the River Blackwater SAC were recorded and having regard to the spatial scale of the potential project impacts and the distance to other SACs, coupled with the fact that there are no mobile conservation interests and no realistic connectivity (physical or hydrological), I do not consider it appropriate to include any further SAC sites.

I have therefore included those European sites with a possible ecological connection or pathway in this screening determination. These sites coincide with those identified by the applicant within a 'potential Zol' and are considered in Table 1 below.

Those with identifiable ecological connections / continuity through the S-P-R model are considered further in terms of the likely impacts / significant effects thereon.

European Site	QI / SCI	Distances	Connections
Mullaghanish to Musheramore Mountains SPA (004162)	Hen Harrier (Circus cyaneus) [A082] https://www.npws.ie/protected- sites/spa/004162	0.5km – closest turbine 0.37km – grid connection 2.7km – TDR-POI-44 0.0km – BEMP lands	Yes – hen harrier observed within the study area – highly mobile – loss of habitat, collision risk and general disturbance.
Blackwater River (Cork/Waterford) SAC (002170)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	3.5km – closest turbine 3.3km – grid connection 0.0km – TDR-POI-34 50m – TDR- POI 44 3.2km – BEMP lands	Yes – proximity of on-site watercourses and potential deterioration of water quality impacting on habitats / species susceptible to change. I note an additional connection at TDR-POI 44 where works are proposed

	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]		
	Austropotamobius pallipes (White-clawed Crayfish) [1092]		
	Petromyzon marinus (Sea Lamprey) [1095]		
	Lampetra planeri (Brook Lamprey) [1096]		
	Lampetra fluviatilis (River Lamprey) [1099]		
	Alosa fallax (Twaite Shad) [1103]		
	Salmo salar (Salmon) [1106]		
	Lutra lutra (Otter) [1355]		
	Trichomanes speciosum (Killarney Fern) [1421]		
	https://www.npws.ie/protected- sites/sac/002170		
The Gearagh SAC (000108)	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	11.4km – closest turbine 6.1km – grid connection	No – significant distance – no associated mobile conservation
	Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation [3270]	14.6km – TDR-POI 45	interests – no connectivity (physical or hydrological).
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	BEMP lands	
	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]		

	Lutra lutra (Otter) [1355] https://www.npws.ie/protected- sites/sac/000108		
The Gearagh SPA (004109)	Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos) [A053] Coot (Fulica atra) [A125] Wetland and Waterbirds [A999] https://www.npws.ie/protected- sites/spa/004109	11.8km – closest turbine 6.6km – grid connection 14.9km – TDR-POI-45 6.9km – BEMP lands	Yes – within the core feeding range of Mallard (up to 15km).
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (000365)	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto- Nanojuncetea [3130] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130]	11.9km – closest turbine 10km – grid connection 5.6km – TDR-POI-39 11.9km – BEMP lands	No – no connectivity (including hydrological) between the proposed project and the SAC. Noted as closest SAC also designated for Annex I wet (4010) and dry (4030) heath.

	Calaminarian grasslands of the Violetalia calaminariae [6130] Molinia meadows on calcareous, peaty or clayey- silt-laden soils (Molinion caeruleae) [6410] Blanket bogs (* if active bog)		
	[7130] Depressions on peat substrates of the Rhynchosporion [7150] Old sessile oak woods with Ilex and Blechnum in the		
	British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]		
	Taxus baccata woods of the British Isles [91J0]		
	Geomalacus maculosus (Kerry Slug) [1024]		
	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]		
	Euphydryas aurinia (Marsh Fritillary) [1065]		
	Petromyzon marinus (Sea Lamprey) [1095]		
	https://www.npws.ie/protected- sites/sac/000365		
Mullaghanish Bog SAC (001890)	Blanket bogs (* if active bog) [7130] <u>https://www.npws.ie/protected- sites/sac/001890</u>	12.5km – closest turbine	No – significant distance – no mobile conservation

		11.1km – grid connection 10km – TDR- POI-40 12km – BEMP lands	interests – no ecological continuity (e.g., hydrological links).
St Gobnet's Wood SAC (000106)	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] <u>https://www.npws.ie/protected- sites/sac/000106</u>	15.5km – closest turbine 14.2km – grid connection 14.3km – TDR-POI 45 14.9km –	No – significant distance – no mobile conservation interests – no ecological continuity.
Lower River Shannon SAC (002165)	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia	 >15km – closest turbine >15km – grid connection 0.0km – TDR-POI-8 >15km – BEMP lands 	No – no works are proposed and no invasive species identified at POIs that intersect SAC – no connectivity (e.g., hydrological links).

	Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]		
	Molinia meadows on calcareous, peaty or clayey- silt-laden soils (Molinion caeruleae) [6410]		
	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]		
	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]		
	Petromyzon marinus (Sea Lamprey) [1095]		
	Lampetra planeri (Brook Lamprey) [1096]		
	Lampetra fluviatilis (River Lamprey) [1099]		
	Salmo salar (Salmon) [1106]		
	Tursiops truncatus (Common Bottlenose Dolphin) [1349]		
	Lutra lutra (Otter) [1355]		
	https://www.npws.ie/protected- sites/sac/002165		
Curraghchase Woods SAC (000174)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	>15km – closest turbine >15km – grid connection	No – no works are proposed and no invasive species

	Taxus baccata woods of the British Isles [91J0] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] <u>https://www.npws.ie/protected- sites/sac/000174</u>	80m – TDR- POI-7 >15km – BEMP lands	identified at POIs that intersect SAC – no connectivity (e.g., hydrological links).
Askeaton Fen Complex SAC (002279)	Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Alkaline fens [7230] <u>https://www.npws.ie/protected- sites/sac/002279</u>	 >15km – closest turbine >15km – grid connection 0.30km – TDR-POI-5 >15km – BEMP lands 	No – no works are proposed and no invasive species identified at POIs that intersect SAC – no connectivity (e.g., hydrological links).
(000432)	formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) [6210] Limestone pavements [8240] Euphydryas aurinia (Marsh Fritillary) [1065] https://www.npws.ie/protected- sites/sac/000432	 >15km – closest turbine >15km – grid connection 0.3km – TDR-POI-4 >15km – BEMP lands 	works are proposed and no invasive species identified at POIs that intersect SAC – no connectivity (e.g., hydrological links).
River Shannon and River Fergus Estuaries SPA (004077)	Cormorant (Phalacrocorax carbo) [A017] Whooper Swan (Cygnus cygnus) [A038]	>15km – closest turbine	No – no works are proposed and no invasive

SAC – no connectivity
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	Black-headed Gull (Chroicocephalus ridibundus) [A179] Wetland and Waterbirds [A999] <u>https://www.npws.ie/protected- sites/spa/004077</u>		
Cork Harbour SPA (004030)	Little Grebe (Tachybaptus ruficollis) [A004] Great Crested Grebe (Podiceps cristatus) [A005] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Shelduck (Tadorna tadorna) [A028] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Red-breasted Merganser (Mergus serrator) [A069] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A141] Lapwing (Vanellus vanellus) [A142]	>15km – closest turbine >15km – grid connection >15km – TDR-POI >15km – BEMP lands	No – significant distance – beyond core feeding range. Distances noted as c. 37km (c. 60km instream).

	Black-tailed Godwit (Limosa		
	limosa) [A156]		
	Bar-tailed Godwit (Limosa Iapponica) [A157]		
	Curlew (Numenius arquata) [A160]		
	Redshank (Tringa totanus) [A162]		
	Black-headed Gull (Chroicocephalus ridibundus) [A179]		
	Common Gull (Larus canus) [A182]		
	Lesser Black-backed Gull (Larus fuscus) [A183]		
	Common Tern (Sterna hirundo) [A193]		
	Wetland and Waterbirds [A999]		
	https://www.npws.ie/protected- sites/spa/004030		
Great Island	Mudflats and sandflats not	>15km –	No –
Channel SAC (001058)	covered by seawater at low tide [1140]	closest turbine	significant distance – no mobile
	Atlantic salt meadows	>15km – grid	conservation
	(Glauco-Puccinellietalia maritimae) [1330]	connection	interests – no ecological
		>15km –	continuity.
	sites/sac/001058	IDR-POI	
		>15km – BEMP lands	
Table 1 – Europea	an sites		<u> </u>

Likely impacts of the Project

None of the proposed turbines are located within the Mullaghanish to Musheramore Mountains SPA (004162), the Blackwater River (Cork/Waterford) SAC (002170) or The Gearagh SPA (004109) and therefore the proposed development will not result in any likely direct impacts on either of the SPA sites or the nearby SAC site.

However, due to the proximity of the proposal to the SPAs, Mullaghanish to Musheramore Mountains SPA in particular, and tributaries⁵⁰ of the River Blackwater, upstream from the Blackwater River (Cork/Waterford) SAC, impacts generated during the construction/demolition phase, including reduction in ground/surface water quality, dewatering, and subsequent drying out of peat soils with consequent reduction in species diversity, and the deterioration of habitat quality, terrestrial and aquatic, and potential indirect habitat loss, terrestrial and aquatic, requires further consideration. Operational impacts (e.g. collision risk), also required consideration.

As noted, the main potential impacts are set out in Table 2-5 of the document containing the screening report. I consider that likely impacts of the project include:

- Suspended solids and sedimentation (muddy water with increased turbidity etc.)

 arising from excavation and ground disturbance,
- Cement/concrete (increased turbidity, nitrate, phosphate, pH levels etc.) arising from construction materials,
- Hydrocarbons (ecotoxic) accidental spillages from construction plant or on-site with plant also acting as a vector for the spread of invasive plant species,
- Wastewater (nutrient and microbial rich) arising from accidental discharge from construction compound (toilets and washrooms etc.),
- Displacement/disturbance of birds, mammals, invertebrates and fish etc. arising from construction activities e.g. noise, vibrations etc.
- Loss of suitable feeding and/or breeding/wintering habitat arising from construction activities e.g. site clearance, noise, vibrations etc.
- Bird collision with turbine towers, blades (moving or stationary) and/or associated infrastructure; and barrier to dispersal, regular movements or migration for migratory bird species.

For the reasons set out in section 10.8 of the IR, I have no concerns regarding the impact of the proposal on air quality from carbon dioxide (CO₂) emissions, as raised by the DHLGH-DAU during scoping in relation to peat extraction. There is no likely impact on the Blackwater River (Cork/Waterford) SAC or above SPAs in this regard.

⁵⁰ Nadanuller Beg Stream and the Glen (Banteer) Stream

Likely significant effects on European sites in view of Conservation Objectives

The applicant has applied the source-pathway-receptor model in determining the potential for significant effects on the identified European sites (Tables 3-2 to 3-4).

Blackwater River (Cork/Waterford) SAC

With limited physical footprint, the primary pathway to the Blackwater River SAC is via ground and surface water discharges to the Nadanuller Beg and the Glen (Banteer) streams. Given their general proximity, and the particular proximity of turbine T20 to the latter, there is little distance for the process of dilution of any pollutants or settlement of sediment to occur before reaching the River Blackwater.

The SAC is designated for Annex I floating river vegetation (3260), which can support the other QI species by modifying water flows, promoting fine sediment deposition and providing shelter and food for fish and invertebrates. Pollution of the River Blackwater, as a result of an accidental spillage or contaminated run-off, could affect these macrophyte assemblages present within the SAC, impacting on both habitat and species. Similarly, accidental groundwater pollution, could affect the vegetation and habitat distribution of any downgradient assemblages (see NIS – Appendix 2).

As noted, the river also supports Annex II freshwater species including freshwater pearl mussel, white-clawed crayfish, lamprey species and salmon that require high levels of water quality. These sensitive receptors are therefore at possible risk via the pathways identified, particularly during construction and decommissioning, and this extends to QI otter due to the loss of suitable feeding and breeding habitat.

The likelihood of significant effects during the operational phase cannot be ruled out given the potential for accidental spillages (e.g., hydrocarbons) during routine maintenance, although the likelihood is significantly less than during construction.

Based on the information provided in the screening report, my site inspection, review of the conservation objectives and supporting documents, I consider that in the absence of mitigation measures beyond best practice construction methods, the proposed development has the potential to result in the following impacts:

- Habitat degradation as a result of hydrological impacts, i.e., effects could extend to habitats and species downstream of the proposed development site and the associated surface water discharge points.
- Habitat degradation as a result of hydrogeological impacts, i.e., effects could extend to groundwater dependent habitats, and the species those habitats support, in the local area that lie downgradient of the development site.
Mullaghanish to Musheramore Mountains SPA / The Gearagh SPA

Musheramore SPA is designated for the hen harrier (A082) and I note their presence in the study area during the survey period. This is unsurprising given the proximity of the SPA to the proposed wind farm site and indeed the closest turbine, c. 0.5km.

The Gearagh SPA is designated for *inter alia* mallard (A053) and whilst I note the distance to the closest turbine, some 11.8km, the core feeding range is up to 15km.

The construction of the wind farm and BEMP lands will result in the permanent removal of 88ha of plantation woodland and create areas of suitable habitat for hen harrier breeding, foraging and nesting, however other suitable habitats will be affected, such as previously undisturbed peatland including Annex I wet heath, and wetland habitat in the case of the mallard. There is also potential for disturbance/displacement of these SCI bird species through such habitat loss, and this could extend beyond the turbine excavations through dewatering/drying out.

Equally, disturbance/displacement could occur through increased human activity at the wind farm site which can cause abandonment of hen harrier roosts and nests, and further indirect impacts are likely due to the loss of aquatic prey as a result of changes in water quality as discussed above e.g. increased sedimentation etc.

As the turbines will be much greater in height than the surrounding landscape, there is potential for collision with turbine towers, blades (moving or stationary), or a barrier effect to regular movements of this SCI bird species within the area of the turbines.

Based on the information provided in the screening report, my site inspection, review of the conservation objectives and supporting documents, I consider that in the absence of mitigation measures beyond best practice construction methods, the proposed development has the potential to result in the following impacts:

- Ex-situ habitat loss through removal of peatlands and wetlands.
- Habitat degradation as a result of hydrological impacts, i.e., effects could extend to habitats and species downstream / loss of aquatic prey.
- Habitat degradation as a result of hydrogeological impacts, i.e., effects could extend to groundwater dependent habitats / drying out of wet heath etc.
- Direct mortality of hen harrier and mallard as a result of turbine collision.

I therefore agree fully with the applicants' findings that such impacts could be significant in terms of the stated conservation objectives of the Mullaghanish to Musheramore Mountains SPA, Blackwater River SAC and The Gearagh SAC, when considered on their own and in combination with other projects and plans in relation to pollution related pressures and disturbance on QI/SCI habitats and species.

Overall Conclusion Screening determination

In accordance with Section 177U of the Planning and Development Act 2000, as amended, and on the basis of objective information provided by the applicant, I conclude that the proposed development could result in significant effects on the Mullaghanish to Musheramore Mountains SPA, the Blackwater River (Cork/Waterford) SAC, and The Gearagh SPA in view of those site's conservation objectives. It is therefore determined that Appropriate Assessment (Stage 2) [under Section 177V of the Planning Act] of the proposal is required. Measures intended to reduce/avoid significant effects have not been considered in the screening process.

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