Inspector's Report

ABP-315652-23

Development	Construction of 6 no. wind turbines, turbine foundations and crane pad hardstanding areas, new site tracks and associated drainage infrastructure and all associated infrastructure, services and site works. Application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement.
Location	Annagh North, Coolcaum, Fiddane, Cooliney, Rathnacally, Farranshonikeen, Ardnageehy and Clashganniv, Co. Cork.
Planning Authority	Cork County Council
Planning Authority Reg. Ref.	217246
Applicant(s)	Annagh Wind Farm Limited
Type of Application	Planning Permission
Planning Authority Decision	Refused Permission
Type of Appeal	First Party Appeal

Appellant(s)	Annagh Wind Farm Limited
Observer(s)	None
Date of Site Inspection	13th and 14th February 2024
Inspector	Susan Clarke

Contents

1.0 Site Location and Description

1.1. The appeal site is located in a rural area of County Cork, approx. 45km north of Cork City. Charleville is located approx. 6km northeast of the site, while Buttevant is located approx. 8km southeast of the site. The closest settlement village is Churchtown, which is located approximately 3km to the south of the site.

1.2. The site measures 78.6ha and is accessed via the L1322 local road, which meets the N20 at Ballyhea, approx. 4km to the east of the site entrance. The surrounding area is characterised by generally dispersed settlement patterns with small linear clusters of one-off rural dwellings and farmyards located along the local road network. The EIAR submitted with the application states that there are 104 No. dwellings located within 2km of the site (31 No. dwellings within 1km of the turbines), with the closest dwelling being within 690m of a proposed turbine (No. T03). To the east of the site, on the southern side of the L1322[1], there is a fertilizer storage facility and a meat processing facility (Dawn Meats), with an Aldi storage depot located further east on the northside of the road, at the junction with the N20. It is proposed that the meteorological mast that forms part of the development, would be constructed on site via the L5528.

1.3. The site comprises a mixture of habitat types including semi-mature broadleaved forestry plantation (comprising Ash, Pedunculate oak, Scot's Pine and Alder), with wetland grassland and improved agricultural grassland also present. The site is generally flat with the elevations ranging from approx. 105m to 95m OD. The field boundaries are, to a large extent, delineated by hedgerows. There are a number of agricultural tracks throughout the site. Two parallel streams traverse the site in a north south direction; Oakstream to the east and Ardglass Stream to the west. Both of these streams drain to the Awbeg River, which forms part of the Blackwater River (Cork/Waterford) candidate Special Area of Conservation (cSAC). The northeastern boundary of the cSAC is located approx. 170m from the subject site. The Awbeg River runs in a south east direction from the site, where it meets the River Blackwater, approx. 25km from the subject site. The grid connection route crosses the Rathnacally stream along the L1322.

[1] Note that this local road is referred to as the 'L1307-30' in Reason for Refusal No. 3.

1.4. The Ballyhoura Mountains Proposed Natural Heritage Area (pNHA) and Ballinvoneer Pond pNHA are located approx. 6.5km east of the site. There is a recorded archaeological monument within the site: fulacht fia (C0007-175), located c.75m to the west of the proposed substation.

1.5. There are two operational wind farms within 2.5km of the subject site with two turbines each (Rathnacally Wind Farm (located east of the site) and Boolard Wind Farm (located north of the site)). Three further wind farms are located within a 10km radius of the site. There are a number of both proposed and permitted renewable energy related projects in close proximity to the subject site. Charleville 110kV substation is located approx. 3km northeast of the subject site.

2.0 Proposed Development

2.1. The proposed development consists of:

- Construction of 6 no. three bladed, wind turbines with a blade tip height of 175m, rotor diameter of 150m and a hub height of 100m;
- Construction of turbine foundations and crane pad hardstanding areas;
- Construction of new site tracks and associated drainage infrastructure;
- Upgrading of existing tracks and associated drainage infrastructure where necessary;
- Upgrade of entrance onto Local Road L1322;
- All associated drainage and sediment control including the installation of new watercourse or drain crossings and the re-use or upgrading of existing internal watercourse and drain crossings;
- Construction of 1 no. permanent onsite 38kV electrical substation to ESBN specifications including:
    - Control building with welfare facilities;
    - Electrical infrastructure;
    - Parking;
    - Wastewater holding tank;

- Rainwater harvesting;

- Security fencing;

- All associated infrastructure, services and site works.

- 1 no. temporary construction site compound and associated ancillary infrastructure including parking;
- Tree felling to facilitate construction and operation of the proposed development;
- Installation of medium voltage (20/33kV) and communication underground cabling between the proposed turbines and the proposed on-site substation and associated ancillary works;
- Erection of 1 no. permanent meteorological mast with a height of 100m above ground level and associated access track;
- Installation of medium voltage (up to 38kV) underground cabling between the proposed on-site substation and the existing Charleville substation and associated ancillary works. The proposed grid connection cable works will include 2 no. watercourse crossings and the installation of 8 no. pre-cast joint bays;
- All associated site development works.

2.1.1. The total Maximum Export Capacity (MEC) of the proposed wind farm is anticipated to be approximately 37.2MW, however this is subject to the output power of the turbine model available at procurement stage. The candidate turbine model is the Vestas V150.

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

2.2. The associated grid connection cable, which will connect the on-site substation to the existing Charleville Substation within the townland of Rathnacally, County Cork, will consist of 38kV cables and will be approx. 5.7km in length (including 3.4km to be constructed primarily within the existing road corridor and 2.3km of underground cable to be laid within private lands within the proposed wind farm site).

2.2.1. It is proposed that turbine deliveries shall approach the site from the North via Foynes Port, the N69, the N18, the M20, the N20 and L1322. Temporary accommodating works will be required at selected locations along the TDR to facilitate the delivery of large components to the site. These works do not form part of the proposed development for which planning permission is sought, but it is stated by the Applicant that these elements are assessed as appropriate within the EIAR and NIS.

2.2.2. Replant lands have been identified at Emlagh, County Clare in lieu of the proposed tree felling required to accommodate the project. Similarly to the TDR works, the replanting does not form part of the proposed development for which planning permission is sought, but it is stated by the Applicant that these elements are assessed as appropriate within the EIAR and NIS. The Applicant states that the tree felling and planting will be subject to a felling licence.

2.2.3. An Environmental Impact Assessment Report and Natura Impact Statement (Stage 2 Appropriate Assessment) have been prepared in respect of this application. A full list of documents submitted with the planning application is set out below.

3.0 Planning Authority Decision

3.1. Decision

The Local Authority issued a Notification of Decision to Refuse to Grant on 22nd December 2022 subject to three reasons:

> **Reason 1:** ***Insufficient information*** *has been provided to enable the Planning Authority to determine beyond reasonable scientific doubt that the proposed development, either individually and/or in-combination with other plans or projects will not have an* ***adverse effect on Whooper Swan a species of conservation interest of the Kilcolman Bog SPA*** *and an adverse effect of the integrity of the Kilcolman Bog Special Protection Area. Furthermore, based on the information submitted the Planning Authority is unable to determine beyond reasonable scientific doubt that the proposed development, either individually and/or in-combination with other plans or projects will not have an adverse effect on* ***qualifying interest species and the integrity of the Blackwater River (Cork/Waterford) SAC****. Therefore, on the basis of the information provided with the application and in light of the Stage 2 Appropriate Assessment undertaken, the*

Planning Authority cannot be satisfied that the development, individually, or in combination with other plans or projects, would not be likely to have a significant effect on the integrity of the Kilcolman Bog Special Protection Area (Site Code: 004095) and the Blackwater River (Cork/Waterford) SAC (Site Code: 002170) in view of the site conservation objectives of both. In such circumstances, the granting of permission for this development would contravene ***materially development objective BE 15-2*** *`Protect sites' habitats and species' of the Cork County Development Plan 2022 and the requirements of the Habitats Directive as set out in Part XAB of the Planning and Development Act 2000 as amended.* (Bold: My emphasis.)

Reason 2: *Having regard to the location of the proposed development in an area of high local biodiversity value,* ***the extent of high valued habitat to be lost and the extent of key ecological receptors to be lost and/or impacted*** *upon by the proposed development it is considered that the proposed development would be likely to have a permanent significant negative effect on an area of high local biodiversity value. Therefore, the granting of permission for this development would contravene* ***materially development objectives BE 15-2 and ET 13-7*** *of the Cork County Development Plan 2022.* (Bold: My emphasis.)

Reason 3: *Taking into account the* ***poor condition and alignment of the public road (L-1307-30)*** *in proximity to the proposed site entrance, and having regard to the plans and particulars submitted with the planning application the applicant has not adequately demonstrated the provision of* ***vehicular sightlines and a safe vehicular entrance*** *onto the public road and that traffic likely to be generated by the proposed development would not endanger public safety by reason of a traffic hazard. The proposed development is therefore considered to* ***conflict with Objective TM 12-8(d)*** *of the Cork County Development Plan 2022 and to grant permission would be contrary to the proper planning and sustainable development of the area.* (Bold: My emphasis.)

3.2. Planning Authority Reports

3.2.1. Request for Further Information

A **Request for Further Information** was issued on 4th February 2022 in relation to five items. In summary, the RFI requested *inter alia*:

1. Biodiversity

a) Revised development design which would significantly modify the footprint of the proposal, reducing the impact on habitats of high ecological value.

b) Preparation of a Habitat and Species Management Plan.

c) Preparation of an Outline Habitat Reinstatement Plan.

d) A revised bat impact assessment.

e) Quantify the loss of badger territory/habitat.

f) Provide any information pertaining to correspondence with the NPWS in respect of derogation licenses to facilitate the proposal.

g) Provide information in relation to known existing and historic Hen Harrier nest and winter roosting sites relative to the proposed development site.

2. Appropriate Assessment

<u>Blackwater River (Cork/Waterford) cSAC</u>

a) Provide assessment of the implications of works on the nearby waters of the Blackwater River SAC and its associated qualifying habitats and species.

b) Provide an assessment of potential hydrogeological impacts on the Blackwater River (Cork/Waterford) cSAC, including impacts from the excavation of borrow pits and the associated impacts from same on groundwater.

c) Clarify the extent of any proposed instream works.

d) Submit a detail reasoned assessment of the mitigation measures proposed to avoid silt, hydrocarbon, fresh cement and bentonite

contamination of the streams upstream of the Awbeg River system, along with a description of same.

e) Submit a Method Statement for any instream works.

f) Submit details of biosecurity measures.

Kilcolman Bog SPA/Whooper Swan

g) Identify locations of nearest known existing and historic Whooper Swan sites relative to the proposed development. Submit an assessment of potential for activities associated with the construction and/or operation of the windfarm to cause disturbance/displacement to Whooper Swan at/from these sites.

h) Undertake a nocturnal migration/Nocturnal flight call (nocmig) survey of the site and provide an assessment of any likely implications from the proposal on Whooper Swan.

3. NPWS

a) Submit a detail reasoned assessment of the mitigation measures proposed to avoid silt, hydrocarbon, fresh cement and bentonite contamination of the streams upstream of the Awbeg system (part of the Munster Blackwater cSAC).

b) Submit a dawn and dust survey of the wind turbine areas for commuting whooper swans during the winter period.

c) Consider redesigning the proposal with a greater emphasis on adherence to the mitigation hierarchy and 'mitigation by avoidance' of semi-natural habitats of high value and local importance to biodiversity.

d) Consider relocating T02 to an area of lower biodiversity value.

e) Clarification that trained dogs will be used in bat fatality monitoring, as opposed to being optional.

f) Clarification of whether there was sufficient surveying undertaken by experienced professionals of the area used by hen harrier as a roost site within the wind-farm, in order to detect how frequently it was used.

4. Noise

a) Submit a noise contour map.

b) The referenced noise sensitive receptors should be shown on a suitably scaled map.

c) Explanations as to why the prevailing background noise is higher at lower wind speeds.

d) Clarify why no prevailing background noise level data and corresponding curves were submitted for night-time periods.

e) Clarify why data in Table 7.15 does not correlate with Section 7.5.3.1 in relation to predicted noise levels at receptor R167.

5. Engineering

a) Submit sightlines of 90m in both directions at 4.5m setback at proposed entrance 2.

b) Provide reasoning for proposed entrance 2.

c) Access to the site is to be via the northern access only.

d) Liaise with local companies to agree delivery times.

e) Prior to commencement a road conditioning survey is to be completed.

f) Submit and agree a traffic management plan.

g) Provide details of water supply to compound.

h) Submit wastewater details from compound office/canteen.

i) Submit details to prevent surface water runoff on public road.

j) Submit a flood risk assessment.

k) Provide details of agreement with ESB in relation to grid connection at Rathnacally.

l) Submit details of public consultation with residents along access route.

m) Submit wheel washing facilities and measures to deal with cleaning any mud of the roads in the vicinity of the site.

n) Same point as point h above.

o) Enter into discussions with developer of Reg. Ref. 17/5799 to utilise the same duct for the purposes of their development.

6. EIAR

a) Submit updated EIAR having regard to the above items.

b) Provide a summary of schedule of all mitigation measures and monitoring proposals.

c) Provided further detail in relation to cumulative impacts of existing wind farms in the area, permitted solar farms in the area, planned solar developments in the area, and the proposed M20 particularly in terms of Chapters 8, 11, 15, and 17. Revised LVIA to be submitted in this regard also.

d) Chapter 17 to be updated and the interactions and inter-relationships should be reassessed having regard to the further information requested.

e) Chapter 2 and the selection, consideration and assessment of alternatives should be reviewed and updated having regard to the further information requested.

A response to the RFI was submitted to the Local Authority on 3rd November 2022.

3.2.2. **Planning Reports**

Senior Executive Report (21st December 2022)

Key points of note from the Report include:

- Proposal is consistent with wind energy policy at national and local level.
- No objection to the principle of development, subject to normal proper planning and sustainable development considerations. However, close proximity to areas where wind energy development is normally discouraged (i.e. close to an cSAC).
- The following was noted in relation to the submitted EIAR:

- Highlights the recommendations/conclusions of the various technical reports from internal departments within the Local Authority and Prescribed Bodies in relation to various chapters of the EIAR in relation to air quality and climate, noise and vibration, biodiversity, land, soils and geology, hydrology and water quality, traffic, archaeology, telecommunications and aviation.
- Overall it is considered that that the socio-economic impacts of the proposed development will be beneficial.
- Notes that the shadow flicker will exceed the DoEGLG guidelines, but subject to mitigation measures, it is anticipated that zero hours of shadow flicker will occur within a 10 rotor diameter of the windfarm. As such, no significant shadow flicker effects are anticipated.
- The proposed development should be assessed further in terms of cumulative impacts with the permitted solar farms, planned solar developments and the proposed M20 works.
- Further assessment of the interaction and inter-relationships should be conducted.
- Having regard to the above, it was considered that the EIAR was inadequate and a revised EIAR was requested.

- The Officer noted the Local Authority's Ecology Unit's comments with respect to the submitted NIS and EIAR (see Section 3.3.1, below).
- The Report concludes: *"In summary, I note and highlight the recommendation of refusal from the Council's Heritage/Ecology unit. There are very significant issues which are arise here which need to be addressed particularly in relation to biodiversity. It is even questionable if these issues are surmountable?"*
- The Planning Officer stated that should the applicant be afforded the opportunity to address the concerns, further information should be sought in relation to i) biodiversity (habitats and species, bats, badgers, hen harrier), ii) Appropriate Assessment (Blackwater River (Cork/Waterford) cSAC, and Kilcolman Bog SPA/Whooper Swan), iii) concerns raised by NPWS, iv) noise, v) engineering, and vi) EIAR.

Senior Planner's Report (3rd February 2022)

- Concurs with the SEP's recommendation to seek further information.

Senior Executive Report (21st December 2022)

- Notes the Ecology office response and NPWS submission in relation to the RFI Response for Items 1, 2 and 3 of the RFI. (See Section 3.3.1 and 3.4.1, respectively below.)
- Notes the Area Engineer's response to Item 5 of the RFI (See Section 3.3.2, below). Also notes that the extent of roadside boundary removal/alteration is not clear.
- The LVIA and photomontages have not been revised and do not show the proposed wind turbines in the context of the permitted Fiddane Solar Farm.
- Concerns regarding the cumulative visual and landscape impacts from the proposed development and other renewable energy developments in the area. This is a working rural landscape and the idea that the landscape will be 'transformed into an energy landscape' as submitted needs to be carefully assessed to avoid an over saturation of renewable energy development and to ensure the intrinsic rural landscape character and features are retained and not eroded.
- Notes that there will be impacts upon the local road network during the construction phases however it is considered that these will be temporary and conditions in relation to construction and traffic management could mitigate the impacts.
- The proposal would not endanger public safety by reason of a traffic hazard at the proposed entrance to the site. The landscape character/visual impacts of the proposed entrance arrangement along with the biodiversity impacts have not been addressed in respect of the proposed entrance.
- The significant adverse impacts in terms of ecological and biodiversity outweigh the benefits of the proposed development.
- Due to the proposed curtailments of the wind turbines (approx. 5 months each year to respect the Whooper Swan spring and autumn migration and

curtailment in April-October during bat activity season), the viability of the project is questionable.

- Given the uncertainty regarding potential impacts on Whooper Swan and taking the precautionary approach, the effects could be significant.
- There are concerns that the applicant has not fully addressed concerns regarding proposed instream works given that qualifying interest species Lamprey and Otter were recorded within the Oakfront Stream, with White-clawed Crayfish assumed to be present in the aquatic receiving environment. As such, there is not enough information on file to complete Appropriate Assessment in respect of the impacts upon the integrity of the Blackwater River (Cork/Waterford) cSAC (Site Code: 002170).
- The report concludes recommending that permission be refused as per the conditions attached to the Notification of Decision to Refuse to Grant.

Senior Planner's Report (21st December 2022)

- Concurs with the SEP's recommendation to refuse permission.

3.3. **Other Technical Reports**

3.3.1. **Ecologist** (2nd February 2022 and 15th December 2022)

Original Application (2nd February 2022)

- Key issues raised:

1. Potential for the proposed development to give rise to negative effects on the Blackwater River (Cork/Waterford) Special Area of Conservation and the Kilcolman Bog Special Protection Area;
2. Potential for the proposed development to give rise to negative effects on freshwater habitats and species, including Salmonids, Lamprey and White-clawed Crayfish;
3. Potential for the proposed development to give rise to negative effects on protected terrestrial mammals and avian species, in particular Whooper Swan and bats; and

4. Potential for the proposed development to give rise to negative effects on habitats of high ecological value, including broadleaved woodland and wet grassland, and habitats deemed to be a potential critical resource (foraging, commuting and/or breeding habitat) to protected species.

The report recommends that permission is refused on the following grounds:

> *"It is considered that the proposed development would be likely to have a permanent significant negative effect on an area of high local biodiversity value and it is considered that the granting of permission for this development would be contrary to policy HE 2-3 of the County Development Plan 2014. Furthermore, the proposed development has the potential to cause significant negative effects on populations of protected species occurring within, and dependent on the proposed development site. This would be contrary to policy HE 2-2 of the Plan."*

However, the report states that should clarification be requested from the Applicant, the concerns raised in the report should be addressed. The RFI items listed in Section 3.2.1 above generally encapsulate the matters that the Ecologist recommended clarification be sought.

RFI Response (15th December 2022)

In summary, the Ecologist was of the opinion that the RFI Response did not address the concerns in the RFI, and that the proposal lacked robust information/data. He stated that he could not see how the impacts of the proposal could be mitigated against within the red line boundary of the site. Given the spatial constraints of the site, the habitats present, and the species recorded any further mitigation measures proposed will unlikely result in a significant minimization of the negative effects on certain species and/or high value habitats and the offsetting of significant effects cannot be fully achieved.

In conclusion, the Ecology Office recommended that permission be refused on the grounds that the proposed development would be likely to have a permanent significant negative effect on an area of high local biodiversity value. Furthermore, it could not be determined beyond reasonable scientific doubt that the proposed development, either alone and/or in-combination with other plans or projects would not

have adverse effects on the integrity of the Kilcolman Bog SPA. Accordingly, the proposal was considered contrary to policy BE 15-2 if the Development Plan.

3.3.2. **Area Engineer** (2nd February 2022 and 20th December 2022)

Original Application (2nd February 2022)

Traffic

- Notes the restricted sightlines from the existing and proposed vehicular access points. Recommends that minimum sightlines of 90m in both directions at 4.5m setback from nearest road edge for Northern Entrance 2 and the proposed new access point be provided. No obstructions are to be within these sight triangles.
- Justification for proposed new access point to be provided.
- No deliveries to site are to come from L1307-0 from west of site.
- Access from the south off the L5528 is not suitable due to the number of bridges along the route. All access to the site is to be vias the Northern Entrance only.
- Recommends that after commissioning, the Applicant shall employ the services of an experienced Road Surfacing Contractor, approved by the Area Engineer, to strengthen the road surface in the vicinity of the entrance.
- Applicant to liaise with companies, operating on the local primary roads in the area, on the delivery times so as the road edges will not be damaged by two HGVs passing on a regular basis.
- A road commissioning survey to be undertaken prior to commencement of the development.
- Traffic management plan for the construction phase to be agreed with Local Authority.
- Applicant to submit details of public consultation with residents along the entire access route for application.
- Recommends condition requiring a bond payment to be attached to a positive decision.
- Request that Applicant enter into discussions with the developer of Reg. Ref. 17/5799 to utilise the same duct along the public road as the permitted

development. Failure to do so, will result in a refusal on grounds of over intensification of utility services on a rural road, which has no capacity for additional ducting.

- Recommend that the Applicant enters into discussions with the developer of Reg. Ref. 14/5799 to identify the number and location of joint bays on the local roads, and to come to some agreement to share bay locations.

Water

- Applicant to provide details of compound water supply, wastewater management, and stormwater management.
- Applicant to submit a flood risk assessment.

RFI (20th December 2022)

- RFI response is not to the satisfaction of the Area Office. Recommends refusal due to lack of information.
- Applicant did not demonstrate minimum sightline requirements on site layout for either the Northern Entrance 2 or the proposed new entrance.
- Notwithstanding that the Applicant advised that the access to the site off the L5528 would be for the proposed mast only, the Area Office is clear that this route is not to be used for any purposes of development.
- Recommends that permission be refused for four reasons:

  I. Having regard to the deficient capacity of the local road network, the proposal would result in unacceptable traffic congestion and consequent traffic hazard in Annagh and Fiddane and would set an undesirable precedent for similar future development in the area.

  II. The proposal taken in conjunction with existing and permitted development along the narrow road serving the site would endanger public safety by reason of a traffic hazard because of the extra traffic which would be generated onto a poor rural road network.

  III. The proposal would put additional traffic movements from an entrance where poor sightlines are in place and create over intensification at an entrance

located on a poorly aligned local primary road where there is a notable level of development already present on this road.

IV. The proposed vehicular access to the site would join a busy public road that is poorly aligned, at a point where sightlines are restricted in both directions. The planning authority is not satisfied on the basis of the submissions made on the application, that the traffic likely to be generated by the proposal would not endanger public safety by reason of a traffic hazard.

3.3.3. **Environment (Water Quality)** (19th December 2022)

- Applicant to comply with all conditions in Environment Report of 2nd December 2022.

3.3.4. **Environment (Air and Noise)** (27th January 2022 and 15th December 2022)

No objection, subject to condition.

3.3.5. **Environment (Waste)** (27th January 2022 and 5th December 2022)

No objection, subject to condition.

3.3.6. **Archaeologist** (2nd February 2022)

- One recorded archaeological monument within the site: fulacht fia (C0007-175), located c.75m to the west of the proposed substation in the forested area.
- No objection subject to the implementation of the mitigation measures outlined in Chapter 14 of the EIAR.

3.4. **Prescribed Bodies**

3.4.1. **Department of Housing, Local Government and Heritage – Development Applications Unit - National Parks and Wildlife Services** (2nd February 2022 and 12th December 2022)

Original Application (2nd February 2022)

- Concerns for reduced water quality in the Awbeg River which forms part of the Blackwater River (Cork/Waterford) cSAC.
- Concerns that instream works may impact white-clawed crayfish in the Awbeg River.

- Greater consideration is required in relation to the design and siting of the proposal in relation to habitats of high value local importance for biodiversity. In particular relocation of Turbine 2 to an area of lower biodiversity should be considered.
- A dawn and dusk survey of dispersing swans is required.
- Confirmation required that bat carcass monitoring will be undertaken using trained dogs.
- Clarification required whether there was sufficient experienced survey of the area undertaken in relation to hen harriers.

RFI Response (12th December 2022)

- Cannot be ruled out that the flock of Whooper Swans in the Awbeg/Annagh area form part of the flocks to which the Kilcolman Bog SPA conservation objectives applies.
- Satisfied that as the turbines are more than 600m from the feeding and roosting areas recorded in the avian surveys, disturbance from moving turbines blades are not considered significant.
- As only swan was recorded within the rotor swept area of the proposed wind farm, the available data indicates a low rise from dispersal collision with blades.
- Recommends a condition be attached requiring the wind farm be curtailed between 15th September and 15th December and between 21st February and 15th April in any given year.

3.4.2. **Department of Agriculture, Food and the Marine** (19th January 2022)

- Highlights that a tree felling licence will be required from the Department before any trees are felled or removed.

3.4.3. **Irish Aviation Authority 14th January 2022**

- No objection, subject to condition.

3.4.4. **Irish Water 17th January 2022**

- No objection, subject to condition.

3.4.5. **IAA Air Navigation Services Division** (10th January 2022)

- Does not get involved in the planning process, but should be notified if permission is granted.

3.4.6. **Geological Survey Ireland** (11th January 2022)

- Highlights information resources available on its website and advises that the application is assessed accordingly.

3.4.7. **Inland Fisheries Ireland** (11th January 2022)

- Outlines a number of risks associated with wind farm development and lists a number of recommendations during the construction and operational phases.

3.4.8. **NM20 Project Office** (7th January 2022)

- No observations to make on the application.

3.4.9. **TII** (7th January 2022)

- Notes that the proposal is located in proximity to a future national road scheme.
- A full assessment of structures on roads of any proposed haul route shall be undertaken prior to the commencement of the development.
- An abnormal load assessment should be undertaken.

3.4.10. **Dept of Defence** (24th December 2021)

- Turbines should be permanently illuminated with obstacle lights.
- Obstruction lights should be used.

3.4.11. **Gas Networks Ireland** (4th January 2022)

- No comments on the application.

3.4.12. **The Heritage Council**

- No comments received.

3.4.13. **An Taisce**

- No comments received.

3.5. Third Party Observations

3.5.1. Five third-party observations were submitted to the Local Authority opposing the proposed development. The key points raised can be summarised as follows:

- Adverse impacts on nearby dwellings
- Flooding
- Potential negative health impacts
- Noise
- Shadow flicker
- Negative impacts on water quality, including groundwater
- Overconcentration of wind farm and solar farm developments
- Devaluation of properties
- Interference with TV/Broadband
- Traffic safety concerns
- Negative impact on Annagh Bog and local biodiversity, including bats and birds
- Lack of public consultation
- Negative impact on agri-businesses
- Proposal in an area where development is normally discouraged
- Loss of broadleaf forestry
- Negative visual impact on the landscape
- Negative impacts on cSAC
- Community benefit fund

4.0 Planning History

4.1. There is an extensive planning history relating to the subject site and surrounding lands. Outlined below are the applications considered to be most relevant to the subject case (see Figure 4 attached with this Report).

4.2. **Subject Site:**

4.2.1. **CCC Reg. Ref. 236099** (Solar Farm): Planning permission sought in October 2023 for 92.75ha solar farm and underground grid connection route. The solar farm comprises of four separate land parcels divided by local roads. The most western parcel of that development overlaps the northeastern section of the subject site (i.e. the wind farm's new entrance point, sections of the main access track, and compound area.) (See Dwg. No. 2316_LA001_Rev01, entitled 'Landscape Layout 1 of 3' which forms part of the proposed solar farm project, attached as Appendix A to this Report.) Solar arrays and ancillary infrastructure are proposed on the overlapping area. The location for T01 is within a woodland area, however this solar farm development proposes to maintain the woodland). As such, I understand the two developments as currently proposed to be mutually exclusive. Notwithstanding this, I highlight that the planning history section of the 'Planning Statement' submitted with that application makes to reference to the subject wind farm proposal. At the time of writing this Report, the Local Authority had issued a RFI in respect of the solar development.

4.2.2. **CCC Reg. Ref. 225933** (Solar Farm Interconnectors): Planning permission was granted by the Local Authority in July 2023 for the installation of two 33kV electricity grid interconnectors with a combined total length of 2,217m of underground cable with a joint bay and 1,146m of overhead line supported by 8 triple pole sets and 5 double pole sets, a temporary construction compound and 4 transformer stations. The interconnectors would connect the permitted but not yet built solar farm development at Fiddane (CCC Ref. 17/05799 & ABP-308846-20) to the consented but not yet built Ballyroe solar farm (CCC Ref. 20/4041), and the proposed solar farm development at Coolcaum to the consented but not built Ballyroe solar farm (CCC Ref 20/04041). The interconnectors traverse the north east corner of the subject site, in close proximity to Turbine 1.

4.3. **Neighbouring Sites**

4.3.1. **Fiddane Solar Farm – Abuts the northwestern boundary of the Subject Site**

- **CCC Reg. Ref. 17/05799; ABP Ref. 301028**: Planning permission was granted in 2018 by the Board for the development of a 67.8 hectare solar PV Farm at Fiddane, Ballyhea, County Cork. This permission was quashed as a result of a challenge to the High Court.

- **ABP Ref. 306915:** Following the quashing of the decision under ABP-301028-19, the application was reverted to the Board. The Board granted permission for the solar farm in March 2021.
- **CCC Ref. D/258/19:** Following a Section 4 request to Cork County Council, the Planning Authority issued a declaration determining that a proposed underground grid route constituted development that was not exempted development as an Appropriate Assessment was required for the proposed works.
- **CCC Ref. 19/6817; ABP 308846**: Planning permission secured in July 2021 for the installation of 4,387 metres of underground electricity cable. The cable would connect the Fiddane solar farm to the Charleville 110kV substation at Clashganniv, Ballyhea.
- **CCC Reg**. **Ref. 226536**: Planning permission granted in July 2023 for amendments to previously approved solar farm.

4.3.2. **Ballyroe Solar Farm –** South East of the Subject Site

- **CCC Reg. Ref. 204041**: Planning permission secured in March 2021 for a 102.76 hectare solar PV farm and 3.425 kilometre underground electricity grid connection in the townlands of Ballyroe and Dromin, Ballyhea, Charleville, County Cork.
- **CCC Reg. Ref. 226901:** Planning permission refused in July 2023 for amendments to previously approved solar farm. The Local Authority considered that the proposed development would result in a direct loss of an area of core foraging habitat Whooper Swan a Qualifying Interest of Kilcolman Bog SPA.

4.3.3. **Coolcaum Solar Farm** - South East of the Subject Site

- **CCC Reg. Ref. 225681; ABP 317577-23**: The Local Authority issued a Notification of Decision to Grant Permission for a 42.6 hectare solar farm at Coolcaum, Churchtown, Mallow, Co. Cork, however this decision was appealed by a third-party to An Bord Pleanála. At the time of writing this Report, the Board had not made a decision in respect of the appeal.

4.3.4. **Proposed Ballyhea Substation** - South East of the Subject Site

- **ABP-313001**: An Bord Pleanála determined in July 2022 that the construction of a new 110kV substation and underground grid connection in the townland of

Ballyhea, Charleville, County Cork would fall within the scope of Section 182A of the *Planning and Development Act 2000, as amended*.

- **ABP Ref. 314431**: Soleire Renewable SPV Limited has sought permission from the Board for the construction of a new 110kV 'Single Bay Tail Fed' Substation, 110kV Underground Grid Connection and all associated work at Ballyhea, Charleville, County Cork. At the time of writing this Report, a decision from the Board was pending.

4.3.5. **Boolard Wind Farm** - North East of the Subject Site

- CCC Reg. Refs. 11/4974/ 12/5997; CCC Reg. Ref. 15/5521; ABP Ref. 04.245560; CCC Reg. Ref. 17/5292; ABP Ref. 301000: Permission granted to constructed two wind turbines with tip heights of up to 150.5m, a control building, a 100m high meteorological monitoring mast, and grid connection to the Charleville 110 kV ESBN sub-station works.

4.3.6. **Rathnacally Wind Farm –** East of the Subject Site

- CCC Reg. Ref. 096555/124446/15525/166718**:** Planning permission secured for two wind turbines with tip height up to 150.5m and associated site works at Rathnacally, Charleville. The two turbines are located north of the Dawn Meats facility on the northern side of the L1322 (see photos 2, 7 and 12 attached to this Report).

4.3.7. **Ballyroe Sand and Gravel Quarry -** located next to Ballyroe Solar Farm and South East of the Subject Site

- CCC Reg. Ref. 15/4659; ABP Ref. 300890: Planning permission granted in August 2018 for a sand and gravel quarry with an extraction area of approximately 1.7ha in the townland of Ballyroe.

4.3.8. **Railway Improvement Works**

- ABP Ref. 310286: A railway order application has been made to the Board for works at a number of locations along the Dublin to Cork Railway Line, located east and south east of the subject site.

5.0 Policy Context

5.1. Introduction

5.1.1. Selected renewable energy, climate change and planning policy documents from a European, National, regional and local perspective are outlined below. Chapter 4 of the EIAR submitted provides detailed and extensive further information relating to the policy context for wind energy developments in Ireland.

5.2. EU Legislation/Policy

Renewable Energy Directive 2018/2001/EU

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

Climate and Energy Policy Framework 2030

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

Effort Sharing Regulation (EU) 2018/842

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

5.3. National Policy and Guidance

National Planning Framework and National Development Plan

5.3.1. The National Planning Framework (NPF) 2018 identifies the importance of climate change in National Strategic Outcome (NSO) 8, which relates to ensuring a 'Transition to a Low Carbon and Climate Resilient Society'.

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

5.3.3. The National Development Plan (NDP) 2021-2030 sets out the investment priorities that will underpin the implementation of the NPF, one of which is climate action, the plan commits to increasing the share of renewable electricity up to 80% by 2030. This is an unprecedented commitment to the decarbonisation of electricity supplies.

Climate Action Plan 2023

5.3.4. The Climate Action Plan 2023 is prepared in accordance with the Climate Action and Low Carbon Development (Amendment) Act 2021 and follows the introduction of economy-wide carbon budgets and sectoral emissions ceilings. The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. Notably Section 12 (Electricity) of the CAP provides a Key Performance Indicator (KPI) of providing 9 GW Onshore wind by 2030. Note that the Climate Action Plan 2024 was approved by Government in December 2023, and is currently on public consultation until 5th April 2024.

National Biodiversity Action Plan 2023-2030

5.3.5. The NBCP sets the national biodiversity agenda for the period 2023-2030 and strives for a "whole of government, whole of society" approach to the governance and conservation of biodiversity. The Plan is founded on five objectives: Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity; Meet Urgent Conservation and Restoration Needs; Secure Nature's Contribution to People; Enhance the Evidence Base for Action on Biodiversity; and Strengthen Ireland's Contribution to International Biodiversity Initiatives.

Wind Energy Development Guidelines (2006)

5.3.6. The Guidelines advise that a reasonable balance must be achieved between meeting Government Policy on renewable energy and the proper planning and sustainable development of an area and it provides advice in relation to the information that should be submitted with planning applications. The impacts on residential amenity, the environment, nature conservation, birds and the landscape should be addressed. It states that particular landscapes of very high sensitivity may not be appropriate for wind energy development.

Draft Wind Energy Development Guidelines 2019

5.3.7. In December 2013, the Minister for Housing and Planning announced a public consultation process with respect to a focused review of the 2006 Guidelines and a 'preferred draft approach' to the review was announced in June 2017.

5.3.8. Consultation on the draft Guidelines ended in February 2020. The draft guidelines identify Specific Planning Policy Requirements (SPPR), and subject to formal adoption of the Guidelines, it is intended that these SPPRs would be applied by planning authorities and An Bord Pleanála in the performance of their functions, as well as having regard to additional matters for consideration in assessing wind energy developments. Notable changes in the draft guidelines when compared with the 2006 wind energy guidelines are summarised as follows:

Noise

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

Shadow Flicker

- Section 5.8.1 - The relevant planning authority or An Bord Pleanála should require that the applicant shall provide evidence as part of the planning application that shadow flicker control mechanisms will be in

place for the operational duration of the wind energy development project.

Community Investment

- Section 5.10 - The Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement issued by the Department of Communications, Climate Action and Environment (December 2016) sets out to ensure that wind energy development in Ireland is undertaken in observance with the best industry practices, and with the full engagement of communities around the country. Community dividend – measures to ensure enduring economic benefit to the community

Visual Impact

- Section 6.4- Sitting of wind energy projects.

Set back

- Section 6.18.1 Appropriate Setback Distance to apply - The potential for visual disturbance can be considered as dependent on the scale of the proposed turbine and the associated distance. Thus, a setback which is the function of size of the turbine should be key to setting the appropriate setback. Taking account of the various factors outlined above, a setback distance for visual amenity purposes of 4 times the tip height should apply between a wind turbine and the nearest point of the curtilage of any residential property in the vicinity of the proposed development, subject to a mandatory minimum setback of 500 metres. Policy SPPR 2 – Set back.
- Section 6.18.2 Exceptions to the mandatory minimum setbacks - An exception may be provided for a lower setback requirement from existing or permitted dwellings or other sensitive properties to new turbines where the owner(s) and occupier(s) of the relevant property or properties are agreeable to same, but the noise requirements of these Guidelines must be capable of being complied with in all cases
- Grid connections – underground to be the standard approach.

National Landscape Strategy for Ireland, 2015-2025

5.3.9. This document seeks to integrate landscape into our approach to sustainable development, carry out an evidence-based identification and description of landscape character, provide for an integrated policy framework to protect and manage the landscape and to avoid conflicting policy objectives.

5.4. Regional Policy

Southern Regional Spatial and Economic Strategy (RSES)

5.4.1. The Regional Spatial and Economic Strategy sets out a strategy to implement the NPF in the Southern Region, including Cork. Chapter 8 deals with Water and Energy Utilities with Section 8.2 of the document dealing with the Strategic Energy Grid. It seeks to promote sustainable economic growth, low carbon technology and an increased supply and provision of renewable energies so as to bring about positive regional benefits, such as sustainable development of renewable energy infrastructure. The RPG also states that Regional Climate Change Strategy and Local Climate Change Strategies will aim to reduce reliance on fossil fuels and promote renewable energy sources.

5.5. Other relevant policy documents

- EU Energy Directives and Roadmaps and associated national targets for renewable energy by sector.
- National Renewable Energy Action Plan 2010.
- Strategy for Renewable Energy 2012-2020 • EU Guidance (2013) Wind Energy Developments and Natura 2000 Sites.
- Ireland's Transition to a Low Carbon Energy Future, DCENR, 2015-2030.
- Renewable Energy Policy and Development Framework. DCENR, 2016.
- Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure, DCENR, 2012.
- EU Directives on Flooding and the Water Framework Directive.
- The Planning System and Flood Risk Management, 2009.

5.6. **Local Policy - Cork County Development Plan 2022-2028**

Introduction

5.6.1. The relevant development plan to this assessment is the Cork County Development Plan 2022-2028, which came into effect on 6th June 2022.

Energy

5.6.2. Chapter 13 of the Development Plan addresses Energy and Telecommunications. outlines the aim for energy development in the County, involving the facilitation of development comprising a diverse energy portfolio, including wind and other energy sources. A host of objectives and policies supporting the development of wind energy projects in the County and aimed at controlling the locations and impacts of wind energy developments are also listed within Section 13.6 of the Development Plan. Objectives ET13-4 to ET 13-13 in particular relate to wind energy development.

5.6.3. The subject site is located in an area designated as 'Open to Consideration' for wind energy in the CDP, which notes that such locations have potential for wind farm developments but there are also some environmental issues to be considered.

5.6.4. Objective ET 13-7 'Open to Consideration' states:

> *"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".*

Section 13.7.1 outlines the criteria for wind energy development planning applications:

- The requirement for Environmental assessments (EIA, AA etc.).
- Community engagement and participation aspects of the proposal.
- Grid Connection. In particular grid connections with the potential to impact on the strategic function of the national road network should be discussed and agreed with Transport infrastructure Ireland and should use alternative available routes where feasible in the first instance.
- Geology and ground conditions, including peat stability; and management plans to deal with any potential material impact. Reference should be made to the National Landslide Susceptibility Map to confirm ground conditions are suitable stable for project;
- Site drainage, water storage and hydrological effects such as water supply and quality and watercourse crossings; management plans to deal with any potential material impact on watercourses; the hydrological table; flood risk including mitigation measures;
- Landscape and visual impact assessment, including the size, scale and layout and the degree to which the wind energy project is visible over certain areas and in certain views;
- Visual impact of ancillary development, such as grid connection and access roads;
- Potential impact of the project on natural heritage, to include direct and indirect effects on protected sites or species, on habitats of ecological sensitivity and biodiversity value and, where necessary, management plans to deal with the satisfactory co-existence of the wind energy development and the particular species/habitat identified;
- Potential impact of the project on the built heritage including archaeological and architectural heritage;
- Consideration of carbon emissions balance is demonstrated when the development of wind energy developments requires peat extraction.

- Local environmental impacts including noise, shadow flicker, electromagnetic interference, etc.;
- Adequacy of local access road network to facilitate construction of the project and transportation of large machinery and turbine parts to site, including a traffic management plan;
- Information on any cumulative effects due to other projects, including effects on natural heritage and visual effects;
- Information on the location of quarries to be used or borrow pits proposed during the construction phase and associated remedial works thereafter;
- Disposal or elimination of waste/surplus material from construction/site clearance, particularly significant for peatland sites; and
- Decommissioning considerations.

Objective 13-10: 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.

Objective 13-11: (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.

Landscape

5.6.5. The site is located within an area identified as 'Fertile Plain with Moorland Ridge' (No. 5) landscape character type in the Landscape Character Assessment (2007), which is attached as Appendix F to the CDP. Whilst Table 1 in Appendix F states that this

landscape character type is a 'Very High Landscape Value', 'Very High Landscape Sensitivity' and of 'County' importance, I note that Figure 14.2 of the CDP illustrates that the subject site is not within a High Value Landscape.

Objective GI 14-9 Landscape:

a) *Protect the visual and scenic amenities of County Cork's built and natural environment.*

b) *Landscape issues will be an important factor in all land-use proposals, ensuring that a pro-active view of development is undertaken while protecting the environment and heritage generally in line with the principle of sustainability.*

c) *Ensure that new development meets high standards of siting and design.*

d) *Protect skylines and ridgelines from development.*

e) *Discourage proposals necessitating the removal of extensive amounts of trees, hedgerows and historic walls or other distinctive boundary treatments.*

Objective GI 14-11 Draft Landscape Strategy:

"Ensure that the management of development throughout the County will have regard for the value of the landscape, its character, distinctiveness and sensitivity as recognised in the Cork County Draft Landscape Strategy and its recommendations, in order to minimize the visual and environmental impact of development, particularly in areas designated as High Value Landscapes where higher development standards (layout, design, landscaping, materials used) will be required."

There are no designated scenic routes or protected views in the vicinity of the site.

Biodiversity

Chapter 15 of the CDP addresses Biodiversity. Key Objectives include *inter alia:*

Objective BE 15-2: Protect Sites, Habitats and Species:

a) *Protect all natural heritage sites which are designated or proposed for designation under European legislation, National legislation and International Agreements. Maintain and where possible enhance appropriate ecological linkages between these. This includes Special Areas of Conservation, Special Protection Areas, Marine Protected Areas, Natural Heritage Areas, proposed*

Natural Heritage Areas, Statutory Nature Reserves, Refuges for Fauna and Ramsar Sites. These sites are listed in Volume 2 of the Plan.

b) *Provide protection to species listed in the Flora Protection Order 2015, to Annexes of the Habitats and Birds Directives, and to animal species protected under the Wildlife Acts in accordance with relevant legal requirements. These species are listed in Volume 2 of the Plan.*

c) *Protect and where possible enhance areas of local biodiversity value, ecological corridors and habitats that are features of the County's ecological network. This includes rivers, lakes, streams and ponds, peatland and other wetland habitats, woodlands, hedgerows, tree lines, veteran trees, natural and semi-natural grasslands as well as coastal and marine habitats. It particularly includes habitats of special conservation significance in Cork as listed in Volume 2 of the Plan.*

d) *Recognise the value of protecting geological heritage sites of local and national interest, as they become notified to the local authority, and protect them from inappropriate development.*

e) *Encourage, pursuant to Article 10 of the Habitats Directive, the protection and enhancement of features of the landscape, such as traditional field boundaries, important for the ecological coherence of the Natura 2000 network and essential for the migration, dispersal and genetic exchange of wild species.*

Objective BE 15-8: Trees and Woodlands

d) *Preserve and enhance the general level of tree cover in both town and country. Ensure that development proposals do not compromise important trees and include an appropriate level of new tree planting.*

e) *Where appropriate, to protect mature trees/groups of mature trees and mature hedgerows that are not formally protected under Tree Preservation Orders.*

Objective 15-4:

a) Protect biodiversity and support the principle of biodiversity net gain on land and property owned and managed by Cork County Council.

b) Support the implementation of positive conservation management on lands and property which are owned or managed by Cork County Council;

c) Support and implement best practice in the management of roadside boundaries including tree lines and hedgerows managed by Council;

d) Support national policy to create new woodlands on public land and participate in the Creation of Woodlands on Public Lands Scheme and any successor schemes;

e) Where possible, develop and implement Pollinator Plans and/or Biodiversity Action Plans for lands managed by Cork County Council in accordance with the National Biodiversity Action Plan (and any future National Biodiversity Plan which may be adopted during the lifetime of this Plan) and the All-Ireland Pollinator Plan;

f) Support the use of natural approaches to flood management and control on lands owned or managed by or on behalf of Cork County Council.

g) The Council will incorporate primarily native planting into new landscaping schemes within its own developments.

Transportation

Chapter 12 addresses Transport and Mobility in the CDP. Objective 12-8 Traffic/Mobility Management and Road Safety states:

a) *"Where traffic movements associated with a development proposal have the potential to have a material impact on the safety and free flow of traffic on National, Regional or other Local Routes, the submission of a Traffic and Transport Assessment (TTA) and Road Safety Audit will be required as part of the proposal. Where a Local Transport Plan exists, it will inform any TTA.*

b) *Support demand management measures to reduce car travel and promote best practice mobility management and travel planning via sustainable transport modes.*

c) *For developments of 50 employees or more, residential developments over 100 units, all education facilities, community facilities, health facilities, as well as major extensions to existing such uses developers will be required to prepare Mobility Management Plans (travel plans), with a strong emphasis on sustainable travel modes consistent with published NTA guidance to promote safe, attractive and convenient, alternative sustainable modes of transport as part of the proposal. Where a Local Transport Plan exists, it will inform any Mobility Management Plan.*

d) Ensure that all new vehicular accesses are designed to appropriate standards of visibility to ensure the safety of other road users.

e) Improve the standards and safety of public roads and to protect the investment of public resources in the provision, improvement and maintenance of the public road network.

f) Promote road safety measures throughout the County, including traffic calming, road signage and parking.

g) Co-ordinate proposed zoning designations and/or access strategies in settlement plans with speed limits on national roads."

Flooding

Parts of the site are located in Flood Zone A and Flood Zone B. Section 11.11.11 of the CDP states that *A flood risk assessment / drainage impact assessment will be required to support all planning applications, including those in Flood Zone C*.

5.7. Natural Heritage Designations

5.7.1. The approximate distance and direction to a selection of the nearest European designated natural heritage sites to the appeal site, including Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), are listed in Table 5.1.

Table 5.1 Natural Heritage Designations within 15km of the appeal site

Site Name	Site Code	Approx. Distance (nearest point to subject site (red line boundary), as-the-crow-flies)
Ballyhoura Mountains pNHA	002036	6.5km south-east
Kilcolman Bog pNHA	000092	9.1km south-east
Ballinvonear Pond pNHA	000012	7km south-east
Eagle Lough pNHA	001049	8.2km south-east
Ballyhoura Mountains pNHA	002036	10km east
Mountrussell Wood pNHA	002088	8km east
Awbeg Valley (Above Doneraile) pNHA	000075	11.7km south-east
Ballintlea Wood pNHA	002086	12.6km south-east
Blackwater River (Cork/Waterford) cSAC	002170	170m west
Ballyhoura Mountains SAC	002036	8km east
Kilcolman Bog SPA	004095	9.1km south-east

6.0 The Appeal

6.1. Grounds of Appeal

A First-Party Appeal was received by the Board on 27th January 2023 requesting that the Local Authority's Decision be overturned. The Appeal includes Dwg. No. P2359-0103-0011 Rev B illustrating sightlines from the proposed site entrance. In addition the Appeal includes an addendum to the NIS (Appendix 3) to take account of a proposed interconnector that will traverse the subject site connecting adjacent solar farms (Reg. Ref. 225933).

The grounds of appeal can be summarised as follows:

6.1.1. Whooper Swan and Kilcolman Bog SPA

- It is respectfully submitted that the Planning Authority had, and An Bord Pleanála has, sufficient information available to determine that the proposed project shall not adversely affect the integrity of a European site.

- The NPWS was satisfied that the proposal is unlikely to displace or disturb the Whooper Swan activities in the area. The site in question where Whooper Swan have been observed feeding in Improved Agricultural Grassland fields along the banks of Awbeg River / Annagh Bridge, is c. 1.3 km south of the closest turbine.

- The NPWS submission also recognises that the collision risk to Whooper Swan is low from dispersal collision during the winter season once the species has migrated to the surrounding area.

- The Planning Authority did not follow the NPWS approach to include a "Recommended Condition" with a view to addressing the potential migration impact (i.e. curtailing the operation of the turbines at certain times of the year):

> *"**Wind-turbine operation will be curtailed between dawn and dusk, from 15 September to 15 December, and between 21 February and 15 April**, in any year, unless by further grant of planning permission. **Data from a Supervisory Control and Data Acquisition (SCADA) system, or its equivalent, showing compliance with this condition will be made available to the planning authority and the National Parks & Wildlife Service**. In addition, targeted corpse searches, based on best-practice and using dogs trained for the*

purpose, will be carried out during this period, and the annual results reported to the planning authority and the National Parks & Wildlife Service.

Reason: To avoid significant mortality of migrating whooper swans, a species listed in Annex I of the EU Birds". (Recommend NPWS condition.) (Bold: My emphasis.)

- No objection to the principle of the NPWS recommended condition, however it is requested that the condition be amended so that, in summary, only the first year of the wind farm's operation is curtailed and that annual monitoring and reporting be carried out thereafter:

> *"**From the first year of operation of the turbines, curtailment will be applied between dawn and dusk, from 15 September to 15 December, and between 21 February and 15 April. Data from a Supervisory Control and Data Acquisition (SCAN) system, or its equivalent, showing compliance with this condition shall be made available to the planning authority and the National Parks & Wildlife Service and an annual report detailing the results of this monitoring provided.***
>
> ***Annual monitoring** shall be carried out during the operational phase of the wind farm for years 1, 2, 3, 5, 7, 10, 15, 20, 25 and 30 to monitor the efficacy of the measure and to refine the extent of these curtailment periods. This monitoring shall account for annual variation in migration patterns and ensure that curtailment is targeted to the key period of movement for the species, with the curtailment period revised accordingly in agreement with the planning authority and NPWS. In addition, targeted corpse searches, based on best-practice and using dogs trained for the purpose, will be carried out during the curtailment period. An annual report (for years 1, 2, 3, 5, 7, 10, 15, 20, 25 and 30) detailing the results of this monitoring shall be submitted to the planning authority and the National Parks & Wildlife Service."* (Bold: My emphasis.)

- The RFI Response clearly outlined and clarified that there would not be any instream works and that a clear-span bridge would be utilised to cross the Oakfront Stream. This approach was considered acceptable in the Inland Fisheries Ireland submission.

- The NIS includes a suite of mitigation measures (Table 4-12) to avoid effects on the Blackwater River cSAC.

- Culverts will be required but only for field drains. The field drains within the site have been assessed for their potential to offer suitable habitat for species of conservation interest but are considered to be of low value for these species as they are manmade features (artificial in origin), and their size. However, the potential for indirect effects due to downstream connectivity to natural watercourses from all of the works has been assessed within the AA Screening report and NIS and mitigation measures have been included in the NIS to reduce / avoid these indirect effects. The method for crossing the Oakfront Stream complies with the IFI requirements.

- Reference to “dry instream working conditions will have to be established” for the construction of abutments of the clear-span bridge which is proposed to cross the Oakfront stream in the EIAR section 3.6.7.1 and the CEMP section 3.3.1.6.2, was a typographical error, as no-instream works are proposed (dry or otherwise). The abutments of the clear-span bridge are proposed to be set back a minimum of 2.5 metres from the banks of the Oakfront stream and will be constructed without the requirement of any instream works.

- The Local Authority was satisfied with the biosecurity measures for ensuring no adverse effect to the integrity of the River Blackwater and also appeared to be satisfied with the mitigation measures proposed to avoid silt, hydrocarbon, fresh cement and bentonite contamination of the Blackwater cSAC.

- It has come to the attention of the Applicant that an interconnector is proposed to connect adjacent solar farms that will traverse the wind farm site. The NIS has been updated to take account of potential in-combination effects with the proposed development and mitigation measures have been developed and included to avoid a significant collision risk to Whooper Swan. With the implementation of these measures the proposed project either alone or in combination with other projects or plans will not adversely affect the integrity of Kilcolman Bog SPA or the Blackwater River cSAC (or any other European Site).

6.1.2. **Loss of high-value habitat**

- The subject site was considered to be the preferred option from a technical, financial, and planning perspective, whilst giving rise to the least likely effect on the receiving environment, in comparison to the alternative sites. The project study area is seen to be an optimum location for wind energy development due to the supportive planning policy for the area, the relatively low density of development, its location away from designated European and National sites; its favourable wind speeds and access to the national grid.

- A number of alternative layouts were considered in developing the project.

- The NIS and EIAR demonstrate that there will be no significant residual impacts from the main wind farm site, turbine delivery route and grid connection on biodiversity.

- This proposed development does not negatively impact on rivers, lakes, streams and ponds, peatland and other wetland habitats. The loss of existing hedgerows and treelines has been minimised with replacement planted provided in the Habitat and Species Management Plan.

- The commercial forested area proposed to be felled as part of the application would be felled anyway regardless of this application.

- The study area for all ecological surveys (defined in Table 8.2 of the Biodiversity Chapter in the EIAR) was significantly larger than the footprint of the proposed development, fully encompassing the main wind farm site, the footprint of the proposed grid connection route and turbine delivery route (TDR) nodes.

- Detailed habitat surveys were carried out during the optimal survey period.

- The habitats within the footprint of the development range in value from locally important lower value to locally important higher value. No habitats of county or national importance are located within the footprint of the proposed development. The footprint has been kept to the minimum necessary, including the use of layout design methods including existing roads and stream crossings to minimise excavation works.

- As part of the constraints study, the impacts on habitats of high ecological value at a local level were minimised. Where loss of habitats of high ecological value at a local

level could not be avoided, the impacts of this habitat loss were assessed in the EIAR, see Table 3-1.

- Replant lands will ensure replacement elsewhere of any felled woodland, with the replanting of 15.5ha of agricultural lands elsewhere. Additionally, intensively managed agricultural land onsite will be seeded and maintained as wildflower meadows.

- Further mitigation measures comprising of the translocation of wet grassland turves, hedgerow and treeline reinstatement, meadow management and management of invasive alien plant species will further enhance the existing biodiversity onsite.

- Based on the mitigation by design used to inform the layout of the proposed development (section 8.6.1 of the EIAR) along with the mitigation measures and enhancement measures to be implemented, the proposed development is not contrary to Policy Objective BE 15-2 or ET 13-7.

6.1.3. **Vehicular sightlines and a safe vehicular entrance onto the public road**

- At RFI stage it was confirmed that Entrance 1 is to supersede the existing agricultural entrance to the holding (i.e. Entrance 2).

- Dwg. No. P2359-0103-0011 Rev B submitted with the appeal illustrates that 90m sightline, setback 4.5m from the road edge, (as requested by the Area Engineer) is achievable from Entrance 2. The area shown in light grey on the drawing is temporary hardstanding for the construction phase only, so to allow the delivery of large components to site. Once construction is finalised this area will be reinstated fully, except for the maintenance of sightlines at the entrance.

- The entrance fully complies with TII standards DN-GEO-03060 and will improve safety in the area by reducing forward visibility on the public road by the reduction of the current 'S' bend configuration that currently exists.

- The felling of habitat at the site entrance was fully assessed in the EIAR.

- It is proposed to utilise an existing access to the south from the L5528 to construct the mast. The mast, whilst an important feature for capturing data during the lifetime of the development, its construction is minor in nature and the temporary effects of construction traffic will be minimal. In any case, it is noted that this issue did not form part of the reason for refusal.

6.1.4. **Bats**

- The revised bat assessment undertaken between August 2021 and July 2022 showed comparable bat activity levels onsite to those outlined in Section 8.3.7 Chapter 8 — Biodiversity of the EIAR. The proposed mitigation measures in the biodiversity chapter (section 8.6.2.7 construction phase and section 8.6.3.4 operational phase) are sufficient to ensure the avoidance of significant effects on bats.

- In view of the results of bat surveys undertaken between 2020 and 2022 and the potential impacts of the proposed development on bats, and additional to the proposed mitigation measures in the existing EIAR, the HSMP includes specific measures to ensure that commuting habitat is not severed and there is no net loss of foraging habitat (i.e. hedgerows, treelines and scrub).

- No roosting sites shall be impacted directly as a result of the proposed wind farm as no roosting sites shall be lost as they are all located outside of the site.

- Landscaping will be undertaken in accordance with the Pollinator Friendly Planting Code.

- Increased cut-in speeds will be implemented from commencement of operation.

- The applicant commits to the submission of SCADA data annually to demonstrate compliance with the proposed mitigation measures.

6.2. **Planning Authority Response**

The Local Authority advised the Board on 22nd February 2023 that it is of the opinion that all relevant issues have been covered in the technical reports already forwarded to the Board as part of the appeal documentation and has no further comment to make on this matter.

6.3. **Observations**

None.

6.4. **Further Responses**

None.

7.0 Planning Assessment

7.1. Introduction

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

7.1.2. There are issues which are common to the planning assessment, the environmental impact assessment and Appropriate Assessment, and in order to avoid repetition these are considered in the environmental impact assessment and Appropriate Assessment sections of this Report.

7.1.3. I have examined the file and the planning history, considered national, regional and local policy and I have inspected the site and its surrounds. I have assessed the proposed development and considered the various submissions received from the Applicant, including the First-Party Appeal, prescribed bodies' and third-party observations made to the Local Authority. I consider that the key issues arising for determination by the Board in respect of the planning assessment include the following:

- Principle of the Development
- Residential Amenity
- Biodiversity
- Traffic
- Water
- Public Consultation
- Community Benefit Fund
- Electromagnetic and other Interference, and
- Property Values.

7.2. Principle of Development

7.2.1. In terms of tackling climate change, reducing dependency on fossil fuels in energy production and achieving reduced greenhouse gas emissions, there is clear policy

support at international, national, regional and local level for renewable energy development.

7.2.2. Government policies identify the development of renewable energy as a primary contributor in implementing Ireland's climate change strategy and national energy policy. The crucial role of wind energy in electricity production is recognised at national level in the various plans and strategies published by Government including the published 'Climate Action Plan 2023[2], 'National Renewable Energy Action Plan', 'Irelands Transition to a Low Carbon Future', 'Strategy for Renewable Energy 2012-2020', and the 'National Planning Framework'.

7.2.3. Whilst significant progress has been made, Ireland did not meet its 2020 renewable energy targets. The overall share of renewables stood at 13% which was below the country's EU binding target of 16%. The share of renewable electricity (RES-E) was c. 39.1 % and Ireland had a national target of 40%.[3] The Climate Action Plan 2023 seeks a 75% reduction in emissions by 2030 in the power sector. Acceleration of the delivery of onshore wind, offshore wind, and solar is listed as a key tool to achieving this target. The Plan aims to increase the proportion of renewable electricity to 80% by 2030 and a target of 9 GW from onshore wind, (8 GW from solar, and at least 5 GW of offshore wind energy by 2030).

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

7.2.5. An increase in the amount of renewable energy is also supported at regional and county level through the Southern Regional Spatial and Economic Strategy and the Cork County Development Plan 2022-2028. Both emphasise the importance of energy to economic activity, the necessity to reduce dependence on fossil fuels in energy

[2] I note that the Climate Action Plan 2024 was published in December 2023 and is currently undergoing public consultation.

[3] SEAI Energy in Ireland 2021 Report

production and to increase the quantity of energy from renewables, including wind. The proposed development is situated in an area identified in the current Cork County Development Plan 2022-2028 as 'Open to Consideration' for wind energy development.

7.2.6. I note the Planning Officer's comments in relation to a proliferation of renewable energy projects in the area and the impacts from same on the landscape. However, having regard to the national, regional and local policy support for renewable energy including wind, the location of the proposed development in an area identified as 'Open to Consideration' in the Development Plan, and compliance with the policy objectives for renewable energy development set out in the Development Plan, I consider that the proposed development is acceptable in principle in this location. My assessment of potential environmental impacts from the proposed development is considered out in the remainder of this Report.

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

7.3. **Residential Amenity**

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

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

7.3.2. During the operational phase the wind turbine noise levels at all identified receptors will not exceed the relevant noise limit criteria. No specific noise mitigation measures are therefore required. There are no significant vibrations from an operational wind farm and no mitigation measures are required. No significant effects associated with noise and vibration are therefore likely to arise which would be detrimental to the amenity of property in the vicinity. Notwithstanding this, 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 final turbine type and the mitigation measures required to achieve compliance with the noise limits, such as the curtailing of particular turbines. The condition should also require that the results of the initial noise compliance monitoring be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm. In terms of low frequency noise, there is no evidence before the Board to indicate that the proposed development would result in infrasound, low frequency noise or vibration of a type or magnitude that would impact on the environment or people in the vicinity. These matters are considered in more detail in Section 8.11 below (Noise & Vibration).

7.3.3. Shadow flicker can cause annoyance and impact on the amenity of residential receptors. The Applicant has committed to a curtailment strategy for all turbines that cause an exceedance in the existing daily and annual shadow flicker thresholds at a distance of up to 10 rotor diameters from the proposed development. This is standard best practice on windfarm sites and subject to the implementation of these measures, I am satisfied that shadow flicker would not result in an unacceptable negative impact on the amenity value of dwellings or other structures. This matter is considered in more detail below under Section 8.8 (Population and Human Health).

7.3.4. Regarding visual impacts, the site of the proposed development is zoned 'Open for Consideration' and is therefore considered suitable for wind energy development, subject to full assessment. I consider that the visual impact of the development both on its own, and, cumulatively with other existing wind farms and solar farms in the area has been comprehensively assessed and, in this regard, I refer the Board to Section 8.6 (Landscape and Visual Impact) of this Report. The majority of the viewpoints (VP) demonstrate that the wind turbines will not be overly dominant or have a significant overbearing impact on the landscape. This is largely due to the combination of the topography, the separation distance between the viewing points and the proposed turbines, and the natural and manmade structures in the landscape. The proposed turbines will be visible to varying extents, however, in my opinion, the landscape has the capacity to absorb them. I highlight whilst the turbines will introduce tall new features into the immediate landscape, there are already turbines, albeit smaller in

scale, in the vicinity of the site (Rathnacally Wind Farm and Boolard Wind Farm). As such, I do not consider that the proposed turbines would appear alien. Observers raise concerns in relation to the proposed turbines being visible from Dromina sports fields. I note from my site visit that the Boolard Wind Farm is partially visible from the GAA grounds. Having regard to the distance between the proposed turbines in relation to the GAA grounds and acknowledging the presence of Boolard Wind Farm (and Rathnacally Wind Farm) in the area, I do not consider that the proposal would have any undue residual impact on the use or amenity value of the facility.

7.3.5. Having regard to the foregoing, I do not consider that there will be a significant impact on the area's residential amenity. I highlight that I also consider that the proposed development will not significantly impact on a designated scenic view in the area.

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

7.3.7. In conclusion, no mitigation measures are required for noise and vibration during the operational stage of the development. The impacts during the construction phase will be short term and temporary and capable of mitigation. I am satisfied that potential shadow flicker effects would be effectively mitigated by the measures proposed as part of the scheme. Visual impacts will be experienced particularly in close proximity to the site but in the majority of cases these are not considered to be significant. I am therefore satisfied that the proposed development would not result in significant effects on the amenity of properties in the vicinity to warrant refusal of the application.

7.4. **Biodiversity**

7.4.1. As outlined above, the Local Authority refused permission for the proposed development partially on grounds relating to biodiversity. I have addressed the potential biodiversity in Section 8.8 below. Overall, I have concluded that the potential for significant adverse impacts can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions, with the exception of Whooper Swan. Impacts on Whooper Swan are discussed in Sections 8.10 and 9.0 below.

7.5. Traffic

7.5.1. The Local Authority's third reason for refusal relates to the poor condition and alignment of the L1307-30 in proximity to the proposed site entrance and inadequate provision of vehicular sightlines and a safe vehicular entrance onto the public road. The proposed development was considered to conflict with Objective TM 12-8(d) of the Development Plan, which requires that all new vehicular accesses are designed to appropriate standards of visibility to ensure the safety of other road users. As part of the First-Party Appeal, the Applicant states that Dwg. Nos. P2359-0100-0004 and P2359-0103-001 illustrate that that 160m sightlines, setback 3m from the road edge, are available at the site entrance and as such the proposal is compliant with TII standards DN-GEO-03060. Furthermore, Dwg. No. P2359-0103-0011 (Rev. B) submitted with the Appeal illustrates 90m sightlines, setback 4.5m from the road edge, at the entrance. Having visited the site, I note that visibility from the proposed entrance (Access 1) in an easterly direction would be very poor due to the horizontal alignment of the road and the hedgerows, but I concur with the Applicant that forward visibility would significantly improve as one travels in either direction along this section of the road post-construction, should the lands between the 160m sightlines be kept clear of visual obstructions as stated on the aforementioned drawings. I am satisfied that adequate sightlines can be achieved at Access 1 and subject to a detailed construction traffic management plan being agreed with the Local Authority prior to the commencement of the development would ensure that the proposed development would not represent a traffic hazard. (See Section 8.14 for further discussion in this respect.)

7.6. Water

7.6.1. Observers raise a number of concerns in relation to water quality impacts and in particular impacts on the River Awbeg. I have addressed the potential impacts on water in Section 8.13 below. I have concluded that the potential for significant adverse impacts can be avoided, managed and/or mitigated by standard measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on water quality.

7.6.2. A number of observations submitted to the Local Authority raise concerns in relation to the proposed development's potential to displace water and as a result increase run-off and flood risk. Appendix 10.2 provides the Flood Risk Assessment, which concludes that the proposed development does not represent a flood risk to neighbouring properties. 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. (See Section 8.13 below for further details.)

7.6.3. I note also that there were concerns raised in relation to potential impacts on groundwater as a result of the proposed development. Due to the relatively shallow depths of excavation and temporary short-term nature of any dewatering if required, and in the absence of any conflicting evidence, in my view, it is unlikely that the proposed development would adversely impact groundwater, subject to the implementation of the mitigation measures outlined in the EIAR, CEMP and SWMP. The Applicant has committed to monitoring groundwater, with the installation of groundwater monitoring wells between areas of deeper excavation and sensitive groundwater receptors (including the Blackwater River (Cork/Waterford) cSAC). Subject to condition, I do not consider that there would be significant adverse impacts on water supply in the area or groundwater quality.

7.7. Public Consultation

7.7.1. Observations to the Local Authority are critical of the lack of public consultation with the local community in the preparation of the planning application. In this regard, I note that Objective ET-11 of the CDP requires that wind energy developers 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. Applications for large scale wind energy developments require a Community Report to be submitted with the application detailing the full extent of the consultation. Furthermore, Section 4.4 of the WEDG, which relates to 'Public Consultation with the Local Community', states that: "*Planning authorities should encourage developers to engage in public consultation with the local community. While it is not a mandatory requirement, it is strongly recommended that the developer of a wind energy project should engage in active consultation and dialogue with the local community at an early stage in the planning process, ideally prior to submitting a planning application*."

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

7.7.2. Chapter 5 of the EIAR relates to EIA Scoping and Consultation. In addition, the Applicant submitted a Community Report (Appendix 5.5 of Volume 3 of the EIAR) in line with the requirements of the DWEDG 2019. The Report highlights that a Community Liaison Officer was appointed for the proposed development and that a four public consultation events were held: one in person event at Churchtown and three webinars. These events were advertised in the Corkman Newspaper. In addition, all residents within 2km of the proposed turbines were identified. Home visits were offered on request to these residents. A public consultation brochure, a Frequently Asked Questions compilation, and notification of webinars were issued to these residents. A Virtual Consultation Room and communication tracker were also established.

7.7.3. Having regard to the above, I accept that the Applicant has taken reasonable steps to engage with the local community, including during the particular challenges posed by Covid 19 restrictions. I consider that the approach was broadly consistent with the Code of Practice for Wind Energy Development in Ireland Guidelines for Community Engagement and WEDG and that they have complied with their statutory requirements with regard to publication of site and newspaper notices. I accept these measures have been effective in terms of alerting the public to the proposed development.

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

7.8. Community Benefit Fund

7.8.1. One Observer contends that the proposed community benefit fund is a trojan horse. The Applicant states in Appendix 5.5 that a community benefit fund will be set up as part of the Renewable Energy Support Scheme, as is standard practice from many wind farm projects. Based on the terms of the first auction of the Renewable Energy

Support Scheme (RESS), August 2020, it is expected that for each megawatt hour (MWh) of electricity produced by any future wind farm, the project owners will contribute €2 into a community fund for the RESS contract period i.e. the first 15 years of operation and €1 per MWh for the remaining lifetime of the wind farm, in accordance with Section 5.10 of the DWEDGs. Whilst I note the Observer's concerns, I am satisfied that this issue can be addressed by way of condition.

7.9. Electromagnetic and other Interference

7.9.1. With regard to potential impacts on telecommunications and electromagnetic interference etc. these issues are dealt with in Chapter 16 of the EIAR. The Applicant has carried out a desktop assessment and undertaken extensive consultation with stakeholders. It is concluded on foot of this assessment that any impact in terms of electromagnetic interference or interference with telecommunications are unlikely to occur as a result of the proposed development. If any significant signal interference in any form is identified, the applicant has given an undertaken in the EIAR that appropriate remedial measures will immediately be implemented. It is stated that a range of technical measures are available to mitigate against any instances of interference with signals or transmitters.

7.10. Property Values

7.10.1. Observers contend that the proposed development will have a negative impact on property values. Details of research to support their position has not been provided. This is a recurring issue in wind farm applications and I note that there is research which supports both sides of the argument. I accept that the factors impacting on property value are many and varied, however, I am not persuaded that it can be conclusively determined that windfarms impact negatively on property values.

8.0 Environmental Impact Assessment

8.1. Introduction

8.1.1. The application is accompanied by an Environmental Impact Assessment Report (EIAR) which was prepared by Fehily Timoney. This section of my Report comprises an environmental impact assessment of the proposed development. My assessment is based on the hardcopy issued to An Bord Pleanála following the lodgement of the

First-party Appeal (see Section 10 below in relation to procedural matters.) As noted in Section 7 above, some of the matters considered have already been addressed in the Planning Assessment above. This section of the Report should therefore be read, where necessary, in conjunction with the relevant sections of the Planning Assessment and Appropriate Assessment section (9.0 below).

8.1.2. The Board should note that the EIAR assesses potential environmental impacts associated with the proposed wind farm and grid connection works for which permission is sought as well as the potential impacts associated with other elements of the overall project, which do not form of the proposed development (i.e. turbine delivery route works and forestry replanting).

8.2. **Statutory Provisions**

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

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

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

8.2.3. The proposed development with a total of 6 no. turbines with an estimated output of 37.2 megawatts exceeds these thresholds and is therefore subject to mandatory EIA.

8.3. **Format of EIAR**

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

8.3.2. The EIAR:

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

8.3.3. As is required under Article 3(1) of the amending Directive, the EIAR describes and assesses the direct and indirect significant effects of the project on the following factors: (a) population and human health; (b) biodiversity with particular attention to the species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape. It also considers the interaction between the factors referred to in points (a) to (d).

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

8.3.5. I am satisfied that the EIAR has been prepared by competent experts to ensure its completeness and quality, and that the information contained in the EIAR and supplementary information provided by the developer is up to date, adequately identifies and describes the direct and indirect effects of the proposed development

on the environment, and complies with article 94 of the Planning and Development Regulations 2001, as amended.

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

8.4. **Alternatives**

8.4.1. The issue of site selection and alternatives is addressed in Chapter 2 of the EIAR. I note that Article 5(1)(d) of the 2014 EIA Directive requires:

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

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

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

8.4.3. The EIAR describes the alternatives that were considered under the headings of 'do nothing', alternative sites, alternative layouts, alternative scales and design, alternative grid connection and substation (including on-site substations), 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.

8.4.4. The consideration of alternatives is an information requirement of Annex IV of the EIA Directive, and the single most effective means of avoiding significant environmental effects. Having regard to this requirement and its purpose (i.e. avoidance of significant environmental effects) and noting the nature and purpose of the proposed

development, I am satisfied that the consideration of alternatives that were studied by the Applicant is adequate.

8.5. Development Description

8.5.1. Chapter 3 provides a detailed description of the different elements of the development as proposed. In summary, planning permission, with a 10 year life, is being sought for six wind turbines with a tip height of 175m (rotor diameter 150m and hub height 100m). The proposed turbine is the Vestas V150. The operational life of the project is 35 years. In addition the proposal includes *inter alia*: a 100m meteorological mast, a 38kV substation, and 5.7km of 38kV underground cabling to connect the wind farm site to existing Charleville 110kV Substation within the townland of Rathnacally, incorporation an existing agricultural entrance to form a new larger site entrance onto the L1322 and access tracks. The construction phase will be approximately 12-18 months duration. A Construction and Environmental Management Plan (CEMP) is contained in Appendix 3-1 of Volume 3. It is expected that the decommissioning phase will take no longer than 6 months to complete.

8.6. Policy and Legislation

8.6.1. Chapter 4 provides detail on existing and relevant policy and legislation for the development of this windfarm. This is broken down to International (section 4.2), European (section 4.3), National (section 4.4), Regional (section 4.5) and local(section 4.6) contexts. Whilst the Cork County Development Plan 2014 was in force at the time the planning application was lodged, the Cork County Development 2022 – 2028 is now the operative development plan. (See Section 5.0 above.)

8.7. Likely Significant Effect on the Environment

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

- Air Quality and Climate
- Noise and Vibration
- Biodiversity

- Land, Soils and Geology
- Hydrology and Water Quality
- Population, Human Health and Material Assets
- Shadow Flicker
- Traffic and Transport
- Archaeology, Architectural and Cultural Heritage
- Landscape and Visual
- Telecommunications and Aviation.

8.8. Population and Human Health

8.8.1. Population and human health are addressed in Chapter 11[4] of the EIAR with regard to potential impacts on population, employment and economic activity, and human health and safety.

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

8.8.3. The site is located in a rural area of County Cork, approx. 45km north of Cork City, and directly west of the Ballyhoura Mountains. Charleville is located approx. 6km northeast of the site, while Buttevant is located approx. 8km southeast of the site. The closest settlement village is Churchtown, which is located approximately 3km to the south of the site. The EIAR states that there are 73 No. residential dwellings within 1.5km of the turbine locations, of which 16 No. are also registered as commercial (farmsteads). A further c. 30 No. one-off houses are located along the 5.9km grid connection route.

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

[4] Chapter 11 also addresses Material Assets, which I have addressed separately at Section 8.17 of this Report.

8.8.5. The proposed development is stated to result in between 39 - 44 jobs during the construction phase and 12 – 14 jobs in the operational phase. No significant impact on population or demographic trends is anticipated. The increased employment is stated to have a short-term slight positive impact on local businesses and services during the construction phase and a slight positive indirect impact in the wider area in the operational phase.

8.8.6. The EIAR notes that under the terms of the Renewable Energy Support Scheme (RESS), they will be required to put in place a Community Benefit Fund which is anticipated to be in the region of €180,000 per annum in the first 15 years. The EIAR considers that this will be a long-term significant positive impact on the socio-economic profile of the study area, providing regular payments to near neighbours and funding community projects. The payment of rates and development contributions to Cork County Council is also considered to be a significant positive impact in terms of the improvement of council services.

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

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

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

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

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

8.8.12. Particular aspects of the construction works that may present health and safety issues include general construction site safety (e.g., slip/trip, moving vehicles etc.). lifting of heavy loads overhead using cranes, working with electricity, working at heights or in confined spaces, ground conditions and soil stability, substation construction (high voltage electricity), road safety due to increased traffic numbers and transport of oversized loads, pedestrian and recreation user safety, installation of electrical cables on-site and in the public road corridor and potential emissions impacting air quality and noise. The EIAR considers that, in the absence of mitigation measures, the construction phase has potential for significant impacts to human health and safety for both construction workers and members of the public.

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

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

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

8.8.16. With regard to 'Infrasound', which has been cited as a cause of potential health impacts, the EIAR states that wind turbines do not produce infrasound at amplitudes capable of causing annoyance. In support of this position the applicant refers to a UK Department of Trade and Industry study, ('The Measurement of Low Frequency Noise at Three UK Windfarms', 2006) which concludes that there is no reliable evidence that

infrasound below the hearing threshold produce physiological or psychological effects and that it may therefore be concluded that infrasound associated with modern wind turbines is not a source which may be injurious to the health of a wind farm neighbour.

8.8.17. With regard to shadow flicker and noise, the EIAR refers to the shadow flicker and noise assessments contained in the EIAR. In relation to shadow flicker, it is stated that there will be no exceedances to the guideline limits as set out in the WEDG 2006, while in relation to noise it is stated that operational wind farm noise levels meet the derived night and daytime noise limits at all residential properties surrounding the wind farm. However, for some receptors a new source of noise will be introduced into the soundscape, which will have a long-term slight to moderate significant impact.

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

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

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

8.8.21. During the decommissioning phase, the potential impacts in relation to human health will be similar to those associated with construction phase and the EIAR considers that there is potential for significant impact to human health and safety for construction

workers on site. However, once mitigation measures and health and safety measures are followed, the potential for impact on human health is expected to be insignificant.

8.8.22. **Cumulative Impacts**

8.8.23. With regard to potential cumulative impacts, the EIAR considers the impacts of the overall development, including the turbine delivery route works that do not form part of the proposed development before the Board. Other projects in the study are also considered with regard to potential cumulative impacts. In terms of Charleville Solar Farm, the EIAR states that should the consented project and the proposed wind farm project be constructed at the same time, it would have a temporary, negative, non-significant impact on human health and residential amenity. Furthermore, with respect to the construction of the grid connection route, which is the same for both projects, it is stated that should both routes be installed simultaneously or directly before or after each other, there is potential to cause a temporary, moderate and negative impact to residential amenity as a result of construction activities. Overall, it is considered unlikely that any significant adverse cumulative impacts on population and human health would arise.

8.8.24. **Mitigation Measures**

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

8.8.26. Public safety will be addressed by restricting access to the construction site. Warning signage will be posted at the construction site entrance directing all visitors to the site manager and signage will also be provided on public roads approaching site entrances and along haul routes. Extra safety measures are proposed during turbine deliveries including Garda escort and a comprehensive turbine delivery plan.

8.8.27. Once mitigation measures and health and safety measures are followed, the EIAR concludes that the potential for impact on human health on the construction site and

for members of the public during construction and decommissioning is expected to be not significant and temporary.

8.8.28. Operational phase mitigation includes: site safety measures for personnel including appropriate training and Personal Protective Equipment; enclosure of the substation by palisade fencing; design of electrical elements to comply with EMF standards for human safety; marking out of underground cables where they extend beyond the track or hardstanding surface; installation of lightning conductors, shadow flicker detection systems and ice detection systems on turbines; remote monitoring and scheduled maintenance; design of site drainage will mitigate against any potential flooding; potential operation of some of the turbines in noise reduced modes of operation in order to protect residential amenity; inclusion of a kill switch that can be operated at any time with an overriding manual shutdown system in case of an emergency.

8.8.29. **Residual Impacts**

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

8.8.31. **Assessment**

8.8.32. The main issues raised by the Observers in submissions made to the Local Authority relate to impacts on population and human health are shadow flicker, noise, exposure to electromagnetic fields, and devaluation of property. My assessment in relation to noise impacts is outlined in Section 8.11.

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

8.8.34. Shadow Flicker

8.8.35. The potential for shadow flicker is considered and assessed in Chapter 12 of the EIAR. Shadow flicker effects were considered within a study area of 1,500m from each of the proposed turbines (i.e. 10 x max. rotor diameter). This is in accordance with the WEDG 2006, which states that the potential for shadow flicker at distances greater than that is very low.

8.8.36. I note that the modelling software used to calculate shadow flicker includes a number of conservative assumptions, including 100% cloudless skies and all turbines facing

onto all receptors, which cannot happen in reality. It is therefore contended to be a worst-case assessment, which I would agree with. The WEDG 2006 state that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day. However, the Draft WEDG 2019 set out a zero shadow flicker policy. The EIAR assessment utilises the WEDG 2006 limits, and since those guidelines comprise the current applicable section 28 guidelines for planning authorities, and in the absence of any scientific evidence that those limits would result in unacceptable impacts on sensitive receptors, I consider this to be appropriate.

8.8.37. The applicant's survey identified no receptors within the 500m area, and a total of 75 No. receptors within the wider 1,500m area, the closest of which was 695m from a wind turbine.

8.8.38. Of these 75 No. receptors, 43 No. exceed the 30 minutes per day threshold and 36 No. exceed the 30 hours per year threshold. This is under the worst case 'maximum theoretical hours per day/hours per year' (i.e. with sun shining 100% of the daylight hours).

8.8.39. Applying a more likely scenario, with average annual sunshine hours for the area taken into account, 14 No. receptors are predicted to exceed more than 30 hours per year. Similarly, utilising a more likely average theoretical hours per day, 4 No. receptors will slightly exceed the 30 minutes per day. These receptors (36, 40, 44 and 45) are to the east of the proposed wind farm.

8.8.40. With regard to potential cumulative impacts with the existing Boolard Wind Farm and Rathnacally Wind Farm, the EIAR maps the 10 x rotor diameter distances from the smaller existing turbines (150.5m). The overlap between the potential shadow flicker areas for the wind farms is relatively small, however there are two properties (receptors Nos. 69 and 75) that fall with the overlap between the proposed development and the Rathnacally Wind Farm. The EIAR states that "*shadow flicker modelling has been undertaken which has found that no shadow flicker effects will occur at either property as a result of the Rathnacally turbines. It can therefore be concluded that there is no potential for cumulative shadow flicker impacts when considering Annagh Wind Farm, Boolard Wind Farm and Rathnacally Wind Farm*." However, the referenced analysis by the Applicant does not appear to have been included with the application.

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

8.8.42. Subject to implementation of these mitigation measures, I do not consider that the proposed development would result in significant shadow flicker impacts at residential receptors within 10 rotor diameters of the turbines. Whilst the analysis in relation to receptors Nos. 69 and 75 does not appear to have been included with the application, I am satisfied that subject to the implementation of the standard measures, I do not consider that the proposal would result in annoyance or unacceptable negative impacts on the properties likely to be affected.

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

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

8.8.45. Community Benefit Fund

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

implementation of such a fund, I am satisfied that this matter could be addressed by way of condition should the Board be minded to grant permission for the proposed development.

8.8.47. Human Health

8.8.48. Given the nature of the proposed development, there is potential for significant health and safety impacts during the construction and decommissioning phases, however I am satisfied that the proposed mitigation measures, including the CEMP, adequate training and good practice construction methods, would be capable of mitigating these potential impacts to an acceptable residual level. With respect to concerns in relation to blades potentially becoming detached from the turbine in storm conditions, I note that Section 4.3.4 of the EMP (contained within the CEMP) notes that the turbines are fitted with remote monitoring and control systems to manage rotational speed. It is stated that turbines have the capability to shut down in storm conditions though adjustment of blade pitch and they are also fitted with emergency power supply units to provide backup power in the event of a loss of mains power supply that could impact the control system. Furthermore, the turbines will be fitted with fire suppression systems. In addition, I note that an emergency response plan has also been prepared. Having regard to the following, I do not consider that the turbines represent a significant health hazard to nearby residents.

8.8.49. Property Devaluation

8.8.50. Property devaluation is a recurring issue in wind farm applications, and I note that there is research which supports both sides of the argument. Having regard to international literature and noting both the presence of Rathnacally Wind Farm and Boolard Wind Farm in the area and the minimum 700m separation distance from the nearest dwellings (690m to an involved landowner), it is reasonable to conclude that the proposed development is not likely to result in a significant impact on property values in the area.

8.8.51. **Conclusion**

8.8.52. 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. In conclusion, I consider that the proposed development will have significant positive impacts on the local socio-economic environment. I am also satisfied that the potential for significant

adverse impacts on population and human health can be avoided, managed and mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on population or human health.

8.9. Air and Climate

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

8.9.2. The site is located in a rural area of County Cork, approx. 45km north of Cork City, and directly west of the Ballyhoura Mountains. The closest settlement village is Churchtown, which is located approximately 3km to the south of the site. Land uses in the area generally comprise agriculture and commercial forestry. The EIAR focusses on the potential emissions to air during the construction and decommissioning phases, since there will be no emissions during the operational phase. The EPA Air Quality Index for Health mapping shows the current air quality in the area as 1 – Good. Air quality monitoring results for the nearest EPA monitoring station in Limerick City indicate that the only parameter to be exceeded on a number of occasions was particulate matter (PM10).

8.9.3. In the do-nothing scenario, there will be no change to local air quality or microclimate, however there will be an increase in greenhouse gas emissions at a national level if increasing electricity needs are not met by alternative renewable energy sources.

8.9.4. During the construction phase, air quality impacts will primarily be associated with dust emissions, including particulate matter (PM2.5 and PM10), due to earthworks, tree felling, excavations, material movement and loading/unloading etc. NRA guidance[5] indicates that dust arising from 'major-size' construction sites can result in soiling effects at up to 100m from the source, with PM10 deposition and vegetation effects occurring up to 25m from the source. These distances assume that standard mitigation is in place. The nearest sensitive receptor is c. 690m from the site boundary and therefore it is considered unlikely, once mitigation is in place, that any receptors will be affected by soiling, deposition or vegetation effects during construction. With regard to emissions from construction vehicles and plant, given the distances between source

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

and receptor, impacts are stated to be imperceptible. The associated grid connection works are stated to have a short-term temporary and slight effect as a result of possible soiling and vegetation deposition along the route, resulting from the 'rolling' construction site.

8.9.5. During the operational phase, there will be no significant direct emissions to air. A diesel generator will be located at the site but will only be used as a back-up emergency power supply and emissions will be infrequent and imperceptible. Similarly, maintenance vehicle traffic to the site will be low, with an imperceptible impact. There will be a positive impact on air quality during operation, due to the displacement of fossil fuels.

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

8.9.7. With regard to climate impacts, a positive impact is predicted in the operational phase, due to the displacement of fossil fuels. The EIAR calculates the carbon savings as a result of the proposed development by utilising the Scottish Windfarm Carbon Assessment Tool. The proposed development is estimated to displace 42,966 tonnes of CO2 per annum, with a carbon payback time (i.e. for manufacturing, construction, decommissioning phases) of one year. The EIAR highlights that the Assessment Tool was designed for assessing impacts on peatlands and as there is no peat on the site, the emissions are inflated for the proposed development.

8.9.8. Cumulative Impacts

8.9.9. Potential cumulative impacts are considered in Section 6.4.5 of the EIAR, including the Charleville Solar Farm, Ballyroe Solar Farm, Boolard Wind Farm, Rathnacally Wind Farm, M20 Motorway. It is considered that should the construction, operational and maintenance periods for these projects occur simultaneously, it could result in slight increased traffic emissions. However, provided mitigation measures are implemented, there will be no significant cumulative effects on air quality. During operation, it is contended that the cumulative effect of the various renewable energy projects in the area will have a positive, long-term, significant, effect on air quality and a slight – moderate positive impact on climate.

8.9.10. Mitigation Measures

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

- Construction of internal access roads with graded aggregate finishes prior to commencement of other major construction activities;
- Use of a water bowser to spray work areas and haul roads in order to suppress dust migration;
- Covering of loads which could cause a dust nuisance;
- Use of gravel at the site exit point to remove any dirt from tyres and tracks before travelling along public roads;
- Wheel washing facilities at the entrance/exit point of the site;
- Re-vegetation of earthworks and exposed areas/soil stockpiles as soon as practicable;
- Control of access and egress of construction vehicles, with defined routes and onsite speed limits;
- Construction vehicles and machinery will be serviced and in good working order;
- Implementation of a dust control plan as part of the final CEMP;
- Cleaning of facades of dwellings should soiling take place; and
- Ensuring all vehicles switch off engines when stationary.

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

8.9.13. Residual Impacts

8.9.14. No significant residual impacts are predicted in the construction phase. Once operational, the proposed wind farm will result in the avoidance of emissions from fossil fuel generators, with a residual positive impact on air quality. Similarly, there will

be a residual positive effect on climate, again due to fossil fuel displacement, with the EIAR estimating displacement of c. 42,966 tonnes of CO2 per annum.

8.9.15. Assessment

8.9.16. Air quality in the area is expected to be good and typical of a rural environment with a low level of pollutants. The main potential for significant effects will arise during the construction stage associated with the generation of dust and other fugitive emissions. The construction stage will also involve the operation of plant and machinery that will generate exhaust emissions. Subject to the mitigation measures proposed in the EIAR and the associated CEMP, which generally comprise good practice methods and measures for medium to large construction projects, I am satisfied that no significant adverse effects on air quality and climate are likely to arise during the construction phase. During the operational phase there will be a positive residual impact on air quality and climate due to the displacing of fossil fuel energy generation and the associated displacement of CO2 and other greenhouse gas emissions. I do not consider that this positive impact will be significant.

8.9.17. 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.

8.9.18. Conclusion

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

8.10. Biodiversity

8.10.1. Biodiversity is addressed in Chapter 8 of the EIAR. A Natura Impact Statement was also submitted with the application, and I have addressed the issue of Appropriate Assessment separately in Section 9.

8.10.2. The site does not overlap with any designated nature conservation site but is within 10km of the Blackwater (Cork/Waterford) cSAC (0.65km to the closest turbine) and Kilcolman Bog SPA (9.1km to the closest turbine). The Ballyhoura Mountains SAC is 6.8km from the grid connection route. In terms of Nationally designated sites, there are no Natural Heritage Areas (NHA), but 5 No. proposed Natural Heritage Areas (pNHAs) within 10 km of the proposed wind farm.

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

8.10.4. Two years of bat surveys were completed within the study area during the years 2020 and 2021. The surveys included habitat and preliminary roost assessments, summer roost inspection, winter roost inspection (focused on buildings), bridge and tree inspection, activity surveys (transects) and static detector surveys.

8.10.5. Monthly activity bat surveys were undertaken within and near the boundary of the proposed wind farm site from May to September 2020, static detectors surveys were undertaken in April, May, July, September and October 2020 and in July, August, September and October in 2021, and roosts survey of trees and structures were undertaken in March and June 2021[6]. Emergence roost survey was also undertaken in June 2021 and a bat tracking vantage points surveys in August 2021.

8.10.6. Bird surveys included vantage point watches (winter 2019/20, winter 2020/21, summer 2019, summer 2020), transect/point count surveys (winter 2019/20, winter 2020/21, summer 2019, summer 2020), hinterland surveys (winter 2019/20, winter 2020/21, summer 2019, summer 2020), evening/nocturnal transect survey and watch for Woodcock (summer 2020, summer 2021), and habitat assessment and nocturnal transect survey for Nightjar (summer 2021). In addition, watercourses within the aquatic survey study area were searched for signs of Kingfisher where suitable habitat was present during aquatic surveys undertaken in September 2020. Surveys of aquatic ecology were undertaken in 2020 and 2021, and included walkover surveys,

[6] I note there are minor differences between the dates quoted in Chapter 8 and those referenced in Appendix 8.3. The dates referenced in this Report are taken from Appendix 8.3.

catchment wide electro-fishing, White-clawed Crayfish Survey, Freshwater Pearl Mussel Survey, and biological water quality surveys. The presence of Otter at each aquatic survey site was determined through the recording of otter signs within 150m upstream and downstream on the site.

8.10.7. No rare or protected flora were found during surveys, however three invasive species were observed at the proposed main site entrance the main wind farm site: cherry laurel (high risk), sycamore (medium risk), and Wilson's honeysuckle (the invasiveness of this species has not been assessed by the NBDC and as such it is recorded on a precautionary basis). In addition, Montbretia was recorded on the banks of the Oakfront river in close proximity to the entrance to the site. A number of other invasive species were identified on the turbine delivery route and grid connection works areas.

8.10.8. With regard to habitat types, the EIAR states no flora listed on the FPO or as threatened, vulnerable or endangered on the Irish Red list were recorded during site walkovers. The main wind farm site encompasses a mixture of habitats with wooded habitats (Mixed broadleaved woodland (WL1) and Immature woodland (WS2)) composed of broadleaved and mixed broad-leaf/conifer plantations forming a large portion. Agricultural land comprising Improved agricultural grassland (GA1) and Wet grassland (GS4) dominates the remainder. Hedgerows (WL1), Treelines (WL2) and Drainage ditches (FW4) delineate field boundaries, and Lowland depositing rivers (FW2) flow through and adjacent to the study area. Other habitats present, either in pure form or various mosaic combinations include Conifer plantation WD4, Marsh GM1, Dry meadows & grassy verges GS2, Scrub WS1, Recolonising bare ground ED3, Reed and large sedge swamps FS1, Artificial pond FL8 and Buildings and artificial surfaces BL3.

8.10.9. The following habitats that were recorded within the footprint of the site and classified as ***higher value locally important***: Wet Grassland GS4, Wet Grassland GS4, and Wet Grassland/Marsh Mosaic GS4/GM1.

8.10.10. The following habitats that were recorded within the footprint of the site and classified as ***locally important higher value***: Wet Grassland GS4 (Wet Meadow) (County Importance), Wet Grassland/Improved Agricultural Grassland Mosaic GS4/GA1, Recolonising Bare Ground/Scrub Mosaic ED3/WS1, Hedgerows WL1, Treelines WL2,

Immature Woodland WS1, Mixed Broadleaved Woodland WD1, and Drainage Ditches FW4.

8.10.11. A total of seven terrestrial mammal species were identified within the study area, including Badger, Bank Vole, Otter, Red Fox, Red Squirrel, Wood Mouse, American Mink. It is noted that other mammal species previously recorded in the area but not observed during surveys may also occur, such as Irish Hare, Eurasian Pygmy Shrew, Irish Stoat, and West European Hedgehog. A total of 11. No. badger setts were recorded in the site. A wet otter spraint was observed on protruding gravel in the Oakfront stream c.165m upstream of the proposed internal access track/grid connection point, however no otter holts were recorded.

8.10.12. The results of the 6 No. bat activity surveys carried within the main wind farm site in 2020 are presented in Section 8.3.7.2 of the EIAR and the static detector survey results are set out in Section 8.3.7.8. The detector surveys recorded eight species of bats with a total of 53,735 recordings over three surveys periods. The most commonly recorded species was common pipistrelle, followed by Leisler's and soprano pipistrelle. Lower levels of activity of brown long-eared bat, Daubenton's bat, Nathusius' pipistrelle, Natterer's bat, and whiskered bat were detected.

8.10.13. With regard to avifauna, the EIAR states that a desktop study found a total of 69 species of ecological importance recorded historically in the relevant 10 km grid square. These include 22 species on the then-current Birds of Conservation Concern in Ireland (BoCCI) red list and 39 on the BoCCI amber list. Eight of the species are Annex I species under the EU Birds Directive and five are species which are not rare or protected under Annex I but are included as indicator/keystone species and/or may be sensitive to wind farm development (e.g. Common Buzzard, Eurasian Sparrowhawk, Long-eared Owl, White-throated Dipper and Heron. Additional information arising from the NPWS data request included notification of four confirmed Hen Harrier breeding sites within 5-10 km of the main wind farm (2015) and four confirmed and three possible Hen Harrier breeding sites in the same area in 2010. The 10 km buffer also intersects one of nine non-designated but regionally important breeding areas for Hen Harrier (Ballyhoura Mountains), as established in the 2015 National Hen Harrier Survey. The NPWS also identified records of one occupied Peregrine breeding site within 3-5 km of the main wind farm, and two occupied and one vacant Peregrine breeding site within 5-10 km (recorded in 2017).

8.10.14. The results of the Flight Activity Surveys and hinterland surveys for the various target species are set out in Sections 8.3.8.2 – 8.3.8.24. The results of the 2019 breeding bird transect surveys are shown in Table 8-54. A total of 42 species were recorded during this season. A total of four Red-listed species were recorded: kestrel, snipe, meadow pipit and woodcock. A total of 13 meadow pipit were recorded in transect one (b), and twelve in transect two (a), in the first visit in May. In June, 10 were recorded in the first transect, and three in the second transect. A woodcock feather was discovered along Transect 1 in May 2019. A total of 8 Amber-listed species were recorded during this period: goldcrest, greenfinch, house sparrow, linnet, skylark, starling, swallow and willow warbler. The results of the 2020 breeding bird transect surveys at Annagh are shown in Table 8-52 and Table 8-53. A total of 33 No. species were recorded along the transects over the summer season. 28 species were recorded in both May and June 2020. A total of two Red-listed species were recorded: Kestrel and Meadow Pipit. One Kestrel was observed in May in Transect 3. The Kestrel was seen travelling over the site, descending slowly, presumably for prey. A total of 10 Meadow Pipit were observed in May and 13 were recorded in June in Transect 1. A total of five Amber-listed species were recorded during this period: goldcrest, linnet, skylark, sparrow hawk, willow warbler and swallow.

8.10.15. During hinterland surveys conducted outside the flight activity survey area, a total of 34 hinterland survey target species were recorded. Hinterland target species were primarily those within the groupings of wetland and water birds, raptors and gulls. Sand Martin was also a target species. Table 8.52 lists the target species recorded during hinterland surveys, which comprise eight red-listed, sixteen amber listed and ten are green listed species. Within these, a total of five are Annex 1 species, namely Golden Plover, Kingfisher, Little Egret, Greenland White-fronted Goose and Whooper Swan.

8.10.16. The results of the 2019-20 wintering bird transect survey at Annagh are shown in Table 8-54. A total of 28 species were recorded along the transects. Within these, one Annex I species was recorded during surveys, namely Hen Harrier. This ringtail (female/immature bird) was observed flying low (0-10m) in a south-south-easterly direction in the western part of the study area over wet grassland GS4. A total of four Red-listed species, namely Meadow pipit, Snipe, Kestrel and Redwing were recorded. A total of two Amber-listed species were recorded: Starling and Hen harrier.

8.10.17. The results of the 2020-21 wintering bird transect survey at Annagh are shown in Table in Table 8-58, Table 8-59, Table 8-60 and Table 8-61. A total of 38 species were recorded along the transects in the wintering season. Within these, one Annex I species was present, namely Hen Harrier. A total of four Red-listed species were recorded across the transects during the winter season: Kestrel, Meadow Pipit, Redwing and Snipe. A total of nine Amber-listed species were recorded along the transects, namely Goldcrest, Hen harrier, Mute swan Starling, Swallow, Mallard, Skylark and Willow warbler. The results of the Vantage Point surveys for non-target species are set out in Table 8-62 of the EIAR. A total of 13 species were recorded, comprising no Annex I species, three Red-listed species (Meadow Pipit, Redwing and Swift) and 10 Amber-Listed species.

8.10.18. In terms of aquatic ecology, numerous records for white-clawed crayfish (Austropotamobius pallipes) records were available from the Awbeg River. In the vicinity of the proposed wind farm (Awbeg [Buttevant] SC_010 sub-catchment), the majority of crayfish records were for the Awbeg River (east branch), i.e. a watercourse with no downstream hydrological connectivity to the proposed development. However, a low number of records were available for Annagh Bridge and the L1320 road bridge (2003-2012 period), sites which had downstream hydrological connectivity to the proposed wind farm site. The nearest crayfish record to proposed wind farm infrastructure with potential hydrological connectivity was at Annagh Bridge on the Awbeg River, located approx. 1.7km from the turbine T4 hardstand via the Ardglass River (i.e. over-land and by water distance). A single sea lamprey (Petromyzon marinus) record (spawning) was available for the Awbeg River (east branch) at Longford Bridge (grid square R51). However, this location did not share any downstream hydrological connectivity with the proposed wind farm development or associated infrastructure. Although located within the Munster Blackwater Margaritifera sensitive area, there were no freshwater pearl mussel (Margaritifera margaritifera) records available for the respective 10 km grid squares in the vicinity of the proposed wind farm. The nearest downstream freshwater pearl mussel record was in the vicinity of Ballyhooly on the River Blackwater, >45km instream distance from the proposed wind farm. Common frog (Rana temporaria) were widespread throughout 10km grid squares (R41, R50, R51, R52 & R60) although no records overlapped directly with the proposed wind farm footprint. Numerous records for kingfisher (Alcedo

atthis) were available on the Awbeg River for grid squares R50 and R60 (downstream of Buttevant). No records were available in the vicinity of the proposed wind farm. A low number of otter (lutra lutra) records were spread throughout the relevant grid squares, with records available for the Awbeg Catchment at multiple locations.

8.10.19. Aquatic surveys undertaken in the study area identified 4 No. species of fish: Lamprey sp., European Eel, Brown Trout and Three-spined Stickleback. Table 8.63 of the EIAR provides an overview of aquatic ecology. No Freshwater Pearl Mussel or White-clawed Crayfish were recorded. None of the sites where sampling was undertaken achieved even moderate status water quality (Q3-4) with the least polluted sites scoring Q3. This is generally consistent with the closest EPA monitoring stations to the site. No aquatic flora communities with to the Annex I habitat 'Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation' (3260) (i.e. 'floating river vegetation') were present at any of the sites. No invasive aquatic species were recorded during aquatic surveys. Common Frog was observed during ecological surveys of the study area. Large numbers of tadpoles were observed in a drainage ditch outside the wind farm site boundary southwest of T06 on 23rd April 2020 during deployment of static bat detectors.

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

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

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

- Potential impacts on European Sites are addressed in the NIS.
- Habitats: Long-term Significant Reversible Impact due to tree felling of treelines and hedgerows along the TDR on the L1322.
- Mammals (Excl. Bats):
    - Badger: Medium-term Significant Reversible Impact if construction/felling were carried out in close proximity to an active sett during the breeding season.
    - Short-term Significant Reversible Indirect Impact due to disturbance,

- Red Squirrel: Short-term Significant Reversible Impacts if breeding or resting sites disturbed during clear-felling.
- Otter: Short-term Significant Reversible Indirect impact due to pollutants/contaminants entering watercourses.

- Bats: No Significant construction phase impacts identified.
- Avifauna: Short-term Significant Impact due to disturbance and/or habitat loss for the Grey Wagtail and Kestrel.
- Aquatic Ecology: Significant, negative, short-term impacts on aquatic qualifying interests of the Blackwater River cSAC due to tree felling, access track, turbine base and mast construction, site drainage and GCR works. (Table 8-74 of the EIAR).
- Other Species: Significant Short-term Reversible Impacts on the Common Frog due to reduce water quality as a result of sediment or pollution run off into waterbodies.

8.10.23. Operational Phase Impacts:

- Bats: Long-Term Significant Reversable Impacts at a Local Level due to death by increased noise, collision and barotrauma.
- Avifauna: No significant impacts identified.
- Aquatic Ecology: No significant impacts identified.
- Other Species: No significant impacts identified.
- Mammals and Other Fauna– Replant Lands: Short-term Significant impacts in the event of disturbance to breeding or resting places of Badger, Pine Marten, Irish Stoat and Pygmy shrew occurring during their breeding seasons.

8.10.24. Decommissioning Phase:

- No significant impacts identified.

8.10.25. Cumulative Impacts

8.10.26. As noted above, the cumulative impacts with the turbine delivery route works and the replanting lands in Co. Clare are considered in the cumulative impacts EIAR. In addition, two neighbouring forestry applications in the vicinity of the replant lands, eight

operational wind farms within the vicinity of the wind farm site, upgrades to existing industrial WWTPs, extension of an existing quarry, amendment to Buttevant sub-station, six mast structures, M20 Cork to Limerick Road Improvement Scheme, housing developments, six solar farm projects, grid connections and other for renewable energy related projects, farming, forestry, and arterial drainage projects are considered.

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

- Significant Negative, Short-term Cumulative Impacts in the absence of mitigation on aquatic ecology due to increased release of sediments and nutrients to receiving watercourses.

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

8.10.29. Mitigation Measures

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

- Hardstanding areas kept to the minimum size necessary to minimise land take of habitats and flora.
- Site design/layout deliberately avoided direct impacts on designated sites.
- All cabling placed underground to reduce collision risk to birds over the lifetime of the wind farm.
- Grid connection routes have been selected to minimize the land take of potential sensitive habitats by following the site access tracks and public roads.
- Use of buffers between wind farm infrastructure and hydrological features such as rivers and streams.
- A clear span design bridge has been selected to avoid instream works and to minimize disturbance to banks and associated indirect effects at Oakfront Stream.
- Use of directional drilling where the grid connection crosses watercourses and avoidance of in-stream works.

- Design of GCR and TDR works have taken cognisance of ecological features and sensitive sites.

8.10.31. The proposed construction phase mitigation measures include:

- Project Ecologist/Ecological Clerk of Works (ECoW) to be employed to implement all environmental mitigation measures.
- Works area will be kept to the minimum necessary to minimise disturbance to habitats and flora.
- No disturbance to habitats or flora outside the proposed development area will occur. Machinery and equipment will be stored within the site compound. Designated access points will be established for construction traffic and access to the site will be primarily via the existing local road L1322.
- Turves from diverse wet grassland within the footprint of the T02 hard standing area will be translocated to receptor sites in adjacent fields within the site boundary.
- Hedgerow and treeline reinstatement will be carried out for the proposed wind farm and TDR Nodes. Hedgerows removed or lowered by TDR Node works will be reinstated using the same native species present in original hedgerows. The exception to this is that Ash Fraxinus excelsior is not proposed to be used, due to it's vulnerability to ash dieback disease. Other large-growing native species such as Alder and Oak are proposed instead.
- The site compound area will be reinstated following construction by seeding with a native wildflower meadow seed mixture.
- Management of the spread of non-native invasive species, include pre-construction survey and adherence with the invasive species management plan (Appendix 8.7).
- **Mammals (Excl. Bats):**
    - A preconstruction mammal survey will be undertaken to reconfirm the findings of the EIAR.
    - Ecologist supervision of vegetation, scrub and hedgerow removal areas prior to and during construction as appropriate to identify any site-

specific issues in relation to wildlife not currently present so as to allow appropriate mitigation measures to be put in place.

- Construction operations will take place predominantly during daylight hours to minimise disturbances. Where night works are necessary, the project ecologist/ECoW shall limit them to sections of the site which avoid sensitive features (e.g. mature treelines).
- Pre-construction mammal survey will be undertaken. In the event that a Badger sett is encountered then NPWS will be informed and NRA Guidelines for the Treatment of Badgers Prior To the Construction of National Road Schemes will be followed.
- A number of badger setts were recorded within the site boundary. A derogation report and licence application have been prospectively submitted to NPWS to initiate consultation and to obtain a licence or indication of licence grant in support of the planning application.
- Controlled destruction of Badger setts within the footprint of the proposed infrastructure under ecological supervision and temporary blocking of setts within tree felling buffers and in close proximity to the development during construction phase. No hard-blocking or sett exclusions will be undertaken during the Badger breeding season (December-June inclusive).
- Construction of an artificial sett if necessary.
- Submission of report detailing evacuation procedures, sett excavation and destruction, and any other relevant issues to NPWS.
- If setts are discovered all works within 30m of the sett shall cease including vegetation clearance, NPWS shall be contacted and a derogation/disturbance licence sought.
- In the event that a Badger is found injured NPWS and ISPCA shall be contacted and potentially a vet capable of treating the species.
- Where possible, felling of trees in forestry areas will be limited to time periods outside which Red Squirrel may have young in dreys (peak period January to March).

- Since stoats are born in April, and reach adult size by September, the implementation of mitigation measures for breeding birds (no vegetation removal between March-August inclusive) will avoid disturbance to stoat during the majority of their breeding season. If vegetation clearance is unavoidable during this period, then areas to be clear felled will be surveyed in advance by a suitable qualified ecologist to determine whether any stoat are present. A licence under the Wildlife Act will be sought as necessary.
- An ecologist will check for the presence of hibernating hedgehog and or young mammals as appropriate, prior to vegetation clearance works prior to or during construction (as necessary).
- Outside of the bird breeding season (March 1st to August 31st inclusive) attention will be paid to the removal of vegetation, scrub and hedgerow with regards to leverets, October to March for hibernating Hedgehog and September to October for breeding Pygmy Shrew as is appropriate. Within the breeding bird season and outside of it, attention will be paid to the removal and/or maintenance of dense grassland for breeding hare (all year), pygmy shrew (April to October) and Hedgehog (April to July).
- Buffer zones ranging from 82m to 92m around any treeline, hedgerow, woodland feature into which no part of the turbine should intrude.
- Ecologist/ECoW will supervise areas where vegetation, scrub and hedgerow removal. In the event that an issue arises, the NPWS will be informed and the relevant guidelines will be implemented as appropriate (e.g. NRA guidelines).
- Treelines and mature trees within the wind farm site will be avoided and retained intact.
- Any trees and treelines along approach roads and planned site access tracks will be retained unless felling is unavoidable.
- Where mature trees with low bat roosting potential are proposed to be felled, these trees will be left in situ for 24 hours prior to disposal to allow any bats present escape.

- All hedgerow planting is required to use plants of native provenance.
- The sites hedgerows will be cut every three to four years in rotation if cutting is required, as this will leave areas of undisturbed hedgerows. Cutting equipment used will be sharp so as not to shatter or fray the hedge.
- Hedgerow maintenance will not be carried out between the 1st of March and 31st of August as this is the nesting period for birds and any maintenance at this time will disturb breeding, as per the Wildlife Act 1976 (as amended).
- Existing hedgerows and semi-natural scrub or semi-natural grasslands within the study area outside of the footprint of the development will be retained and incorporated into the landscaping. Disturbed areas will be allowed to recolonise naturally.
- Avoidance of artificial lighting where possible. Where lighting is required, directional lighting will be used to prevent overspill.
- Pre-construction repeat of survey work if necessary.

- **Avifauna**
  - Removal of vegetation and scrub outside of the bird breeding season (March 1st to August 31st inclusive).
  - Construction during daylight hours to minimise disturbances to roosting birds, or active nocturnal bird species. Where night-time works are required they will be supervised by the project ecologist/ECoW.
  - Toolbox talks with construction staff on disturbance to key species.
  - Re-instated hedgerows will be planted with locally sourced native species, resulting in habitat enhancement for local species of conservation importance such as Greenfinch.
  - The translocation of wet grassland from the road and hardstanding footprint associated with T02 will offset habitat loss for breeding Meadow Pipit and Skylark.

- With regard to Kingfisher, the mitigation measures outlined in Chapter 10 (Hydrology and Water Quality).
- A re-confirmatory survey (March/April) will be conducted of the proposed turbine locations, roads and hard standings to assess any evidence of Buzzard, Kestrel, Sparrowhawk, Snipe and Woodcock activity or taking up of new territories. Should any new nests be recorded, works at these locations will be restricted to outside the breeding season (April-July) or until chicks are deemed to have fledged (following monitoring). A similar survey will be implemented for Barn Owl, focusing on the derelict farmhouse near the proposed met mast access track. Although not currently used by this species, this building could be re-occupied by breeding Barn Owl and as such if present at the time of construction a seasonal restriction to avoid disturbance to breeding birds will be required. Works at this location will be restricted to outside the breeding season (April-July) or until chicks are deemed to have fledged (following monitoring).

- **Aquatic Ecology**

- Construction phase mitigation for site drainage as per Chapter 10 of the EIAR and CEMP.
- The installation of buffer zones adjacent to the aquatic zone are particularly important adjacent to the Ardglass River and adjoining drainage channel located near turbine T4 (c.130m shortest instream distance) and the Oakfront River and associated drainage channel near turbine T3 (c.160m shortest instream distance). A minimum buffer zone for felling areas of 15m will be applied. Check dams/silt fences will be installed within the drainage channels adjoining the Ardglass and Oakfront Rivers (i.e. those providing hydrological connectivity from felling areas to receiving watercourses). Drains and silt traps will be maintained throughout all felling works, ensuring that they are clear of sediment build-up and are not severely eroded. Broadleaf brash mats will be used to support vehicles on soft ground and mineral soils erosion and avoiding the formation of rutted areas, in which surface water ponding can occur. Brash mat renewal will take place before they become heavily used and worn. Provision will be made for brash mats along all off-road

routes, to protect the soil from compaction and rutting. Where there is risk of severe erosion occurring, extraction will be suspended during periods of high rainfall.

- Given the sensitivity of aquatic ecological receptors in the Ardglass River, Oakfront River and downstream connecting Blackwater River cSAC (002170) (e.g. salmonids, lamprey species, kingfisher, otter, white-clawed crayfish), it is proposed to undertake felling in the spring period to facilitate the sowing of grass seeds postharvest to aid sediment filtration and nutrient absorption, using native grass species Holcus lanatus and Agrostris capilaris (DAFM, 2018).
- Machine operations will not take place in the 48-hour period before predicated heavy rainfall, during heavy rainfall or in the 48-hour period following heavy rainfall (DAFM, 2018). 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 and in the proceeding years after felling has occurred (DAFM, 2019).
- All track widening will be undertaken using clean uncrushable stone with a minimum of fines to reduce the risk of suspended solid releases to receiving watercourses.
- Still traps will be placed in the new roadside swales. Proposed new tracks will be drained via roadside swales with stilling ponds at the end of the swale. These grassed swales will serve to detain flow and reduce the velocities of surface water flows.
- Mitigation measures to protect site hydrology and water quality are provided in section 10.6 and 10.7.1 of chapter 10.
- Silt Protection Controls (SPCs) are proposed at the location of drain crossings within the site. It is proposed that the SPCs will consist 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.
- The crossing of the Rathnacally Stream on the L1322 will be via horizontal directional drilling (HDD). The drilling works will only be completed during a dry period between July and September (as required by Inland Fisheries Ireland for in-stream works) to avoid the salmonid spawning season and sensitive life stage period. A pre-construction otter survey to reconfirm the findings of the EIAR will be

undertaken in the vicinity of the drilling locations to ensure than no breeding or resting areas are located within 150m of the drilling locations (no holts recorded in these locations to date during otter surveys). Should an otter breeding (holt) or resting area (couch) be detected, a derogation licence would need to be obtained from the NPWS to facilitate drilling works.

- Excavation of the grid route trench will require excavation of soils/subsoils which has the potential to impact the water quality and aquatic habitat of receiving watercourses. Excavated spoil emanating 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, stilling ponds, drain blocking etc.) are outlined in section 10.7 of chapter 10 and the CEMP. On the Rathnacally Stream, silt fences will also be constructed in the vicinity of the excavated areas on the stream banks to prevent siltation of the adjacent watercourse. An Ecological Clerk of Works (ECoW) will monitor both turbidity and observe the riverbed during the drilling process to detect any leakage (frac-out) of drilling fluid. Should this leakage be observed, works will cease immediately. If drilling fluids are required, a biodegradable fluid such as CLEARBORE shall be used rather than Bentonite.
- The GCR crossing of the Oakfront River (WF-HF5) will be via a single span, pre-cast concrete bridge. This will avoid the requirement for instream works. Installation will only be completed during a dry period between July and September (as required by Inland Fisheries Ireland for in-stream works) to avoid the salmonid spawning season and sensitive life stage period. Potential releases of sediment-laden surface run-off as a result of bank clearance works to facilitate bridge installation/access will be mitigated against through the water quality mitigation measures applicable throughout the site (see section 10.7 of chapter 10 and the CEMP).

  - Other Species

- In the event that construction is required to proceed during the breeding season of common frog (approximately January – midsummer), a preconstruction amphibian survey will be completed and translocation under licence will be required where active breeding drains are within the development footprint.
- Protection of existing hydrological conditions where drains are adjacent to or within the zone of influence (i.e. could be impacted by drainage works elsewhere) is required. In the event that the hydrology of existing breeding areas within the zone of influence cannot be maintained, translocation to suitable receptor sites will be used.
- Amphibian fencing will be erected to prevent re-entry to areas which have been evacuated and any areas which could be occupied by amphibians during the construction period.

8.10.32. The proposed operational phase mitigation measures include:

- Implementation of mitigation measures outlined in Hydrology and Water Quality chapter of EIAR and NIS to minimise and prevent the identified indirect impacts on water quality.
- Continued treatment of invasive species in accordance with the invasive species management plan for as long as they persist within the site.
- Badgers: Felling/vegetation clearance operations (maintenance of felling buffers) within 50m of badger setts are not allowed during the badger breeding season (December-June inclusive). Outside the breeding season, the following buffers apply: no heavy machinery (tracked vehicles) may be used within 30m of badger setts; no machinery (wheeled vehicles) may be used within 20m of badger setts; activities of any description are not permitted within 10m of sett entrances (10m vegetation buffer to be retained around setts).
- Bats:
  - Feathering of blades to prevent 'idling' during low wind speeds is proposed for all turbines.
  - Increased cut-in speeds will be implemented from commencement of operation. Cut-in speeds will be increased during the bat activity season

(April-October) and/or where weather conditions are optimal for bat activity (see below) from 30 minutes prior to sunset and to 30 minutes after sunrise at all turbines. Cut-in speeds restrictions will be operated according to specific weather conditions: 1. When the air temperature is above approximately 10 to 11°C at nacelle height. 2. Generally, bat activity peaks at a wind speed range of 5.0 to 6.5m/s (at nacelle height).

- Due to the considerable unnecessary down time resulting from the proposed "blanket curtailment" (above) and the advances in smart curtailment, a focused curtailment regime is proposed as described below from year four of operation. This will focus on times and dates, corresponding with periods when the highest level of bat activity occur within the Site. This includes the use of the SCADA (Supervisory Control and Data Acquisitions) operating system (or equivalent) to only pause/feather the blades below a specified wind speed and above a specified temperature within specified time periods. Post-constructions surveys will be undertaken for the first three years of operation to confirm if blanket curtailment restrictions can be amended in line with post-construction activity levels.
- The post construction surveys will be used to update the current curtailment regime (blanket curtailment) designed around the values for the key weather parameters and other factors that are known to influence collision risk, including wind speed, time after sunset, month of the year, temperature, and precipitation.
- Monitoring will take place for at least 3 years after construction, providing sufficient data to detect any significant change in bat activity relative to pre-construction levels. It will assess changes in bat activity patterns and the efficacy of mitigation to inform any changes to curtailment. During years one to three of operation (under blanket curtailment restrictions) bat activity will be measured continuously between April and mid-October at each turbine location, in combination with carcass surveys.
- If, following the initial 3 years of post-construction surveys, bat activity increases above the baseline and/or remains consistently high and carcass searches indicate fatalities are occurring, increased cut-in speeds will

continue. This will subsequently be monitored in years 5, 7, 10, 15, 20, 25 and 30 with further review after each monitoring period. Alternatively, if it is found that the results of bat activity surveys and fatality searches confirm that the level of bat activity at turbine locations is reduced (to low) then consent will be sought from Cork County Council (in consultation with NPWS) for the cessation in the requirement for these cut-in speeds / curtailment measures, or a reduction on the timing restrictions for these measures.

- Acoustic monitoring will be supplemented with thermal imaging cameras etc. to provide more detailed information on bat activity in the vicinity of turbines. Due to the level of Leisler's activity within the study area, nacelle-level surveys are also proposed for the post construction surveys. These will be used to identify the level of Leisler's bat activity above the tree canopy and within the height of the rotor-swept area.
- Flashing red aviation obstruction lights will be provided on perimeter turbines, subject to approval by the IAA.
- The vegetation-free buffer zones around the identified turbines will be managed and maintained during the operational life of the development. These will be kept clear by mechanical means only and maintained on an annual basis in the same condition as during first clearance.

- Avifauna
  - A post-construction monitoring programme is to be implemented at the subject site in order to confirm the efficacy of the mitigation measures; the results of this will be submitted annually to the competent authority and NPWS.

1. Fatality Monitoring (to be conducted during years 1, 2, 3, 5, 10 and 15 post construction) to include initial carcass removal trials, turbine searches for fatalities and calibration of recorded fatalities against known predator removal rates to provide an estimate of overall fatality rates.
2. Flight Activity Survey during the summer and winter months during years 1, 2, 3, 5, 10 and 15 post construction to include both Vantage Point and hinterland

surveys to record any barrier effect for target species and changes in flight heights of key receptors post-construction.

3. Monthly Wildfowl Census during the winter period (to be conducted during years 1, 2, 3, 5, 10 and 15 post construction) to assess displacement levels, if any, of wildfowl post-construction and to assess overall habitat usage changes within the vicinity of the wind farm.
4. Breeding Bird Survey to be conducted between early April to early July during years 1, 2, 3, 5, 10 and 15 post construction to assess any displacement effects such as those recorded on breeding birds. Overall density of breeding birds to be annually recorded.
5. Breeding Wader Survey to be repeated yearly April – May – June for years 1, 2, 3, 5, 10 and 15 post construction.

- Use of flashing red lights will reduce the likelihood of birds being attracted to turbine locations.
- A barn owl nest box will be installed upstairs in the derelict farmhouse to the south of the wind farm and access via an existing window will be guaranteed. This nest box is to be maintained and replaced as required during the lifespan of the wind farm. Any maintenance work may only be carried out from October to February inclusive to ensure the Barn owl nesting season is avoided.

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

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

8.10.34. Mitigation measures are also set out for the replant lands works that do not form part of the proposed development before the Board.

8.10.35. Residual Impacts

8.10.36. Residual impacts on biodiversity are addressed in Section 8.7 of the EIAR and those associated with aquatic ecology are tabulated in Table 8-95. The EIAR concludes that, with the implementation of the mitigation measures outlined in the NIS and EIAR (including Chapter 8 Biodiversity, Chapter 9 Lands, Soils and Geology, Chapter 10 Hydrology and Water Quality and the CEMP), there will be no significant residual impacts on biodiversity from the proposed development.

8.10.37. **Assessment**

8.10.38. Observations submitted to the Local Authority by local residents raise concerns in relation to the potential disturbance the proposed development could have on the area's biodiversity, in particular on avifauna.

8.10.39. Habitat Loss

8.10.40. The second reason for refusal noted that high valued habitat will be lost as a result of the proposed development. On foot of concerns raised by the Ecology Officer, the Planning Authority requested the Applicant at RFI stage to submit a revised development design which would significantly modify the footprint of the proposal thereby reducing the impact on habitats of high ecological value. The Applicant responded by contending that as part of the constraint study, the impacts on habitats of high ecological value at a local level would be minimised. Table 2.1 of the Further Information Response (repeated as Table 3-1 of the First-Party Appeal) outlines the impact evaluation of key ecological receptors due to habitat loss:

Table 2-1: Impact evaluation of key ecological receptors due to habitat loss

Habitat	Area/ length of habitat to be lost (ha)	Percentage loss of each habitat type (%)	Impact	Rationale
(Mixed) broadleaved woodland	7.47ha	12.0 %	*Long-term Moderate Reversible*	Recent origin and predominantly artificial character
Immature woodland	2.58ha	12.6 %	*Long-term Moderate Reversible*	Recent origin and predominantly artificial character
Mixed broadleaved/conifer woodland	2.34ha	31.9 %	*Long-term Moderate Reversible*	Recent origin and predominantly artificial character
Wet grassland	2.19ha	4.4 %	*Permanent Slight*	Some infrastructure will be left in place after decommissioning
Wet grassland [Wet Meadow]	1.08ha	9.6 %	*Permanent Slight*	Some infrastructure will be left in place after decommissioning
Wet grassland/Improved agricultural grassland	0.14ha	1.1 %	*Permanent Imperceptible*	Modified nature and access track will be left in place after decommissioning
Wet grassland/Marsh	0.34ha	8.0 %	*Permanent Not Significant*	Hardstanding left in place after decommissioning and covered with topsoil
Hedgerows WL1	277m	2.3 %	*Long-term Not Significant*	Small proportion of this habitat which will be lost
Treelines WL2	11m	0.4 %	*Long-term Imperceptible*	Small proportion of this habitat which will be lost and localised nature of loss
Hedgerows/Earth banks WL1/BL2	5m	0.5 %	*Long-term Imperceptible*	Small proportion of this habitat which will be lost
Drainage ditches FW4	515m	3.6 %	*Permanent Imperceptible*	Culverts will be left in place after decommissioning in conjunction with the modified nature and local abundance of this habitat

8.10.41. The Applicant stated also that replant lands would ensure replacement elsewhere of any felled woodland, with the replanting of agricultural lands elsewhere, and that the intensively managed agricultural land onsite would be seeded and maintained as wildflower meadows. In addition, the Applicant argued that further mitigation measures comprising of the translocation of wet grass turves (around the footprint of T02 to adjacent fields), hedgerow and treeline reinstatement, meadow management and

management of invasive alien plant species would further enhance the existing biodiversity on site. A Habitat Species Management Plan and Habitat Reinstatement Plan were also submitted with the RFI Response (Appendix 1 and Appendix 2, respectively).

8.10.42. As outlined above, the main wind farm site encompasses a mixture of habitats with wooded habitats (Mixed broadleaved woodland (WL1) and Immature woodland (WS2)) composed of broadleaved and mixed broad-leaf/conifer plantations forming a large portion. Agricultural land comprising Improved agricultural grassland (GA1) and Wet grassland (GS4) dominates the remainder. Hedgerows (WL1), Treelines (WL2) and Drainage ditches (FW4) delineate field boundaries, and Lowland depositing rivers (FW2) flow through and adjacent to the study area. Other habitats present, either in pure form or various mosaic combinations include Conifer plantation WD4, Marsh GM1, Dry meadows & grassy verges GS2, Scrub WS1, Recolonising bare ground ED3, Reed and large sedge swamps FS1, Artificial pond FL8 and Buildings and artificial surfaces BL3. The Applicant highlights that these habitats from locally important lower value to locally important higher value.

8.10.43. Whilst I note the Local Authority's concerns, as highlighted by the Applicant, no habitats of county or national importance are located within the footprint of the proposed development. Furthermore, no Annex 1 habitats would be directly impacted by the proposal. Having regard to the fact that:

1. the development will not result in the loss of Annex I habitat, nationally or internationally importance,
2. the extent of habitat loss (16.14ha),
3. there are similar type habitats to those that will be lost present in the area,
4. the proposed mitigation measures, and
5. the commercial forested area proposed to be felled as part of the application would be felled anyway regardless of this application

I do not consider that the proposal will result in a significant adverse impact in terms of habitat loss individually or in combination with other plans or projects. As such, in my opinion, it would be unreasonable to refused permission on this basis alone, particularly having regard to the anticipated export capacity (i.e. approx. 37.2MW

renewable energy) that would be generated by the proposed wind farm. The potential impacts from the loss of this habitat on mammals (including bats) is discussed further below.

8.10.44. Invasive Species

8.10.45. Three invasive species were observed at the proposed main site entrance the main wind farm site: cherry laurel (high risk), sycamore (medium risk), and Wilson's honeysuckle (the invasiveness of this species has not been assessed by the NBDC and as such it was recorded on a precautionary basis). In addition, Montbretia was recorded on the banks of the Oakfront river in close proximity to the entrance to the site. A number of other invasive species were identified on the turbine delivery route and grid connection works areas. The EIAR sets out mitigation measures for the control and eradication of these species within the site, as set out in the Invasive Species Management Plan (ISMP) included at Appendix 8.7. This includes a pre-construction survey to establish if the species have spread and the ongoing treatment of the species for as long as they persist within the site during the operational phase. The ISMP also contains measures for the control of invasive species on the grid connection route and the turbine delivery route. I am satisfied that the measures outlined in the EIAR and ISMP are standard good practice measures for the control and eradication of non-native invasive species and, once implemented in full, will adequately avoid or control the spread of the identified species.

8.10.46. Mammals (Excl. Bats)

8.10.47. The EIAR identifies potential direct and indirect significant impacts, prior to mitigation, on Badger, Red Squirrel, and Otter during the construction phase due to displacement and disturbance and water quality impacts in the case of Otter.

8.10.48. No significant impacts are predicted for other mammal species and no significant impacts are identified for any mammals in the operational phase on the wind farm site, due to the low level of activity associated with the proposed development and the existing level of disturbance associated with the commercial forestry operation.

8.10.49. Short-term Significant impacts in the event of disturbance to breeding or resting places of Badger, Pine Marten, Irish Stoat and Pygmy shrew occurring during their breeding seasons within the replant lands are noted. However, the same mitigation as

applicable for afforestation and maintenance operations will be implemented at harvesting and as such no significant residual impacts are identified.

8.10.50. Mitigation measures include the ecological supervision of vegetation removal, pre-construction mammal surveys, day-time working to minimize disruption, restricting felling operations within outside the breeding periods in areas were Red Squirrel, Pine Marten, and Pygmy Shrew are identified. The Applicant advises that appropriate protection measures will be implemented during April-August, inclusive if Irish Stoat are detected. Whilst the specific mitigation measures are not stipulated, I note that an ECOW will be site and as such I am satisfied that these matters could be agreed via condition prior to the commencement of the development.

8.10.51. Whilst no otter holts were observed on site, a single spraint was recorded, which the Applicant states is indicative that the Oakfront Stream may be used as a commuting corridor. The EIAR confirms that a pre-construction mammal survey will be undertaken (no later than 12 months prior to construction) within the mammal survey study area to reconfirm the existing environment as described in the EIAR and, if an Otter holt should be encountered at any point, then NPWS will be informed and NRA Guidelines for the Treatment of Otters Prior To the Construction of National Road Schemes will be followed. I am satisfied that subject to the implementation of proposed mitigation measures there will be no adverse impact on water quality, which could indirect impact on otters.

8.10.52. With regard to Badger, a suite of mitigation measures are proposed, in addition to the general mitigation measures, including an activity survey shall be carried out to assess the potential for the sett to be used by Badgers and appropriate measures such as buffer zones, exclusion periods and hard blocking will be undertaken, obtaining of a derogation/disturbance licence from the NPWS if required and NRA Guidelines for the Treatment of Badgers Prior To the Construction of National Road Schemes will be followed. The EIAR commits to taking no actions to exclude Badgers from active setts during the breeding season (December - June inclusive). Setts within the footprint of proposed infrastructure/felling areas will require (following evacuation if active) controlled destruction under ecological supervision. Based on baseline conditions, one sett will require controlled destruction. Construction of an artificial sett will be undertaken c. 50m from the existing sett in question in consultation with NPWS. Whilst I note the Ecology Officer’s concerns in relation to potential impacts on badgers

resulting from habitat loss, I consider that the proposed mitigation measures are standard and adequate to avoid any adverse impacts on the species.

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

8.10.54. In terms of cumulative impacts, should the proposed development be constructed simultaneously or consecutively with other neighbouring projects, in particular, the permitted two solar farm developments (Fiddane and Ballyroe) and interconnector project, in addition to the proposed Ballyroe substation and Coolcaum solar farm should permission be granted for same, there is potential for temporary disturbance impacts to mammals present in the area. However, I do not consider that there is sufficient evidence to demonstrate that such impacts would have a significant adverse residual impact on mammals, particularly having regard to their temporary nature and the nature and scale of the neighbouring developments in the context of the subject proposal.

8.10.55. Bats

8.10.56. Eight species of bat were recorded during statis detector surveys in the study area; the most commonly recorded species was Common Pipistrelle, followed by Leisler's and Soprano Pipistrelle. Lower levels of activity of Brown Long-eared Bat, Daubenton's Bat, Nathusius' Pipistrelle, Natterer's Bat, and Whiskered Bat were detected. There was a total of 53,735 recordings over three detector surveys periods and as such, the Applicant describes the area as having of high suitability for bats.

8.10.57. A total of 11 potential roosting structures (buildings) were identified within the bat survey study area (extending 275m beyond the land ownership boundary). Within these, minor Pipistrelle roosts (1-3 bats observed emerging) were confirmed at 2 buildings in the northern part of the study area (circa 750m from the closet turbine), and a common/soprano pipistrelle maternity roost (75 bats observed emerging) was confirmed at a building in the south-eastern part of the study area (610m from the closet turbine). The Local Authority's Ecology Officer considers this roost to be of significant local, if not regional value. Commuting routes into the proposal site were observed for both species, with same dispersing within the site foraging along

hedgerows, treelines and forestry edges across the site. A Leisler's bat roost was recorded to the west of the proposed development site with the colony recorded foraging over the study area in May 2020 (c. 65 bats), August 2021 and May 2022 – This species was recorded foraging over open ground at the center-north of the study area within the bounds of the development site in addition to foraging along hedgerows, treelines and forestry edges across the site. As highlighted by the Local Authority's Ecology Officer, all recorded roosts sites are noted to be within the core substance zone of each roosting species.

8.10.58. The Applicant contends that the distance of the identified/potential roosts from the closest elements of proposed infrastructure and intervening buffer provided by woodland plantations and hedgerows mean that no direct or indirect impacts to these roosts will occur during construction. It is stated that there would be Long-Term Significant Reversible Impacts at a local level due to death by increased noise, collision and barotrauma.

8.10.59. Having reviewed the documentation on file, I share similar concerns to the Local Authority's Ecology Officer with regards to the potential indirect impacts from the loss of 16ha habitat including woodland and semi-natural grassland on the local bat population. Notwithstanding this, as stated above the Applicant outlines that the commercial forested area will be felled regardless of this application. I note the various mitigation measures proposed in the Habitat and Species Management Plan (including tree-free buffers 82-92m from turbines, planting new pollinator-friendly hedgerows, and provision of bat boxes (16 No.)) in addition to those on the Chapter 8 of the EIAR including the feathering of turbine blades together with increased cut-in speeds (April-October and/or where weather conditions are optimal for bat activity (see below) from 30 minutes prior to sunset and to 30 minutes after sunrise at all turbines), restricted working hours, and suite of monitoring proposals. Many of these measures are considered standard practice in the wind energy development in Ireland today.

8.10.60. I consider that the planning application demonstrates an adequate understanding of the bat species and potential for roosts present within the area and has outlined a suitably comprehensive range of mitigation and monitoring measures to reduce the potential direct and indirect impacts on bats.

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

8.10.62. Avifauna (Excl Whooper Swan)

8.10.63. Many of the Observations submitted to the Local Authority in respect of the proposed development highlight the large variety of birds that are present in the area and contend that the proposed development would result in significant disturbance to same.

8.10.64. The bird surveys demonstrate that the wind farm site supports a bird fauna that is typical of agricultural land dominated by pasture in Ireland. However the Applicant also highlights that six 'Very High' sensitivity species were recorded in the study area, all of which are Annex I species: Golden Plover, Hen Harrier, Kingfisher, Little Egret, Whooper Swan and Peregrine Falcon. In addition, I note that while a Barn Owl was not recorded during surveys, it has previously been observed inhabiting a derelict building near the wind farm site. With the exception of Whooper Swan, I consider that the most potential significant impacts from the wind turbines on birds are (1) possible loss or deterioration of habitats, (2) disturbance or displacement of birds and (3) collision risk. This is largely due to the location and number of these species recorded in the study area. However, having regard to the documentation on file and noting the comments made by the DAU and Local Ecology Officer, I consider that the proposed mitigation measures to be standard and appropriate to ensure that it is unlikely for there to be significant negative impacts on the identified species. I highlight that there is no references/evidence from the Applicant, Local Authority, DAU or third party observers on this file in relation to impacts on avifauna from Rathnacally Wind Farm or Boolard Wind Farm, albeit that these operational developments are smaller in scale and number than the proposed wind turbines. Whilst short-term disturbance impacts on birds may result when the proposal is considered cumulatively with other neighbouring projects, however having regard to the nature and scale of these projects, I do not consider that significantly adverse impacts are likely to occur. I also note that a comprehensive post-construction monitoring programme is proposed, which will include fatality monitoring, flight activity surveys, wildfowl census, breeding bird and breeding wader surveys at regular intervals.

8.10.65. Avifauna – Whooper Swan

8.10.66. Potential impacts for Whooper Swan are similar to that for other avifauna i.e. (1) possible loss or deterioration of habitats, (2) disturbance or displacement of birds and (3) collision risk.

8.10.67. This issue is discussed in more detail in section 9.0 of this assessment below under the heading of Appropriate Assessment in the context of Whooper Swan being a species that are qualifying interests of European sites. Whilst the species was recorded within the study area, there was only one incident of Whooper Swan flying over the wind farm site. The Applicant presents no records of Whooper Swan foraging or roosting within the wind farm site boundary.

8.10.68. As detailed above, the Applicant contends in the EIAR and RFI response that subject to the implementation of mitigation measures there would be no significant impact on this species as a result of the development. As detailed in Section 9.0 below, I consider that should the proposed development be constructed in the same wintering period as the Ballyroe Solar Farm, it may result in further disturbance/dispersal impacts on the local herd and loss of foraging area for both the local Awbeg floodplain (Churchtown area) swan herd and the Kilcolman Bog SPA herd. In addition, I do not consider that the proposed mitigation measure of curtailing the turbines through the use of new untested technologies that would detect swan in the area, to be reliable. As such, I consider that the proposed development could have a significantly negative residual impact on Whooper Swan and accordingly would be inconsistent with Objective BE 15-2 of the Cork County Development Plan 2022-2028. This issue is considered in more detail in 9.0 below under the heading of Appropriate Assessment.

8.10.69. Aquatic Ecology

8.10.70. The potential for significant impacts on aquatic ecology is primarily associated with the construction phase and relates to potential water pollution and contamination with siltation, hydrocarbons, concrete or resulting from tree felling.

8.10.71. The potential impacts on aquatic ecology associated with tree felling, access track, turbine base and mast construction, site drainage and GCR works (EIAR Table 8.74) are assessed as being Short-term Significant Negative impacts in the absence of mitigation. No potential significant impacts are identified in the operational or decommissioning phases.

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

8.10.73. I consider that the proposed mitigation and monitoring proposals for aquatic ecology as outlined in the Biodiversity and the Hydrology chapters of the EIAR are suitably detailed and comprehensive, and as such I am satisfied that the proposed development is not likely to result in significant residual adverse impacts on aquatic ecology.

8.10.74. Farm Animals/Horses

8.10.75. Concerns were raised by third-party observers to the Local Authority in relation to potential negative impacts to the welfare of farm animals and horses from the proposed development. However, no evidence has been provided to demonstrate same. Having regard to the number of operational wind farms across the Country in rural locations including Rathnacally and Boolard wind farms, I do not consider that there is a significant risk that the proposed development would negatively impact farm animals and horses in the area.

8.10.76. Conclusion

8.10.77. I have considered all of the written submissions made in relation to biodiversity and the relevant contents of the file including the EIAR. I am satisfied that the potential for significant adverse impacts on biodiversity, with the exception of Whooper Swan, can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on biodiversity, except Whooper Swan. See Section 9.0 below for further discussion in relation to Whooper Swan.

8.11. Noise and Vibration

8.11.1. Noise and Vibration are addressed in Chapter 7 of the EIAR. The introduction to the chapter states that potential construction and decommissioning noise and vibration impacts have been determined with reference to British Standard 5228:2009+A1:2014

Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 1 Noise. Potential operational noise impacts are stated to have been determined with reference to the UK Institute of Acoustics', A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, 2013 (IoA GPG). The operational noise is compared with noise limits derived in accordance with the WEDG 2006.

8.11.2. Identified sources of construction phase noise include the construction of turbine foundations, erection of turbines, excavation of cable trenches, construction of associated hardstandings and access tracks, and construction of the substations. The potential for noise from construction vehicles on local roads and access tracks is also identified. Sources of construction phase vibration include tracked excavators, disc cutters and pneumatic breakers used for cable trenching, excavation of turbine foundations, and HGV traffic.

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

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

8.11.5. Section 7.2.3 of the EIAR describes the characteristics of wind turbine noise, with reference to blade swish (amplitude modulation, 'AM'), infrasound and low frequency noise, and tonal noise. With regard to AM, the EIAR outlines research in this area and concludes that, at present, there is no method for predicting Other AM (OAM) at any particular location before turbines begin operation. It is stated that in the unlikely event of OAM being present and following establishment of the likely cause, this can be addressed by turbine manufacturers and/or operator as and when it occurs. Similarly,

with regard to tonal noise, it is stated that a correctly operating wind turbine is not considered to have tonal sound emissions, but that in the event of tonal noise being present and following establishment of the likely cause, this can be addressed by turbine manufacturers and/or operator as and when it occurs.

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

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

8.11.8. The operational noise study area defined in the EIAR includes all residential dwellings with a predicted noise level greater than 35 dB LA90, which is the lowest limit prescribed in the WEDG 2006. This is consistent with the IoA GPG on ETSU-R-97. The Applicant states that Boolard Wind Farm and Rathnacally Wind Farm have been considered in the cumulative assessment. Figure 7.1 of the EIAR indicates the locations of the 94 No. identified noise sensitive locations.

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

in British Standard 'BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise'.

8.11.10. The operational phase noise criteria are stated to be based on the guidance in the WEDG 2006, ETSU-R-97, and Institute of Acoustics' A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, (May 2013). The EIAR states that "in the absence of detailed guidance from the Wind Energy Development Guidelines 2006, best practice has typically been to consider the guidance contained in ETSU-R-97 and more recently the detailed guidance contained in the Institute of Acoustics 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (May 2013) and its six supplementary guidance notes. Where background noise is less than 30 dB(A), an absolute level within the range of 35-40 dB(A) is applicable. However, there is no appropriate approach in relation to the identification of low noise environments "where background noise is less than 30dB(A)" nor is there details on the application of "an absolute level within the range of 35-40 dB(A)." In the absence of detailed guidance from the Wind Energy Development Guidelines 2006, on what range of 35-40 dB to use, the Applicant refers to guidance from ETSU-R-974 which states...

> "The actual value chosen for the day-time lower limit, within the range of 35-40dB(A), should depend upon a number of factors:
>
> - Number of dwellings in the neighbourhood of the wind farm.
>
> - The effect of noise limits on the number of kWh generated.
>
> - Duration and level of exposure."

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

8.11.12. The EIAR argues that the Supreme Court decision in Balz and Heubach v An Bord Pleanála and others [2018] IEHC 309 does not change the legal position of the Wind Energy Development Guidelines, 2006 (WEDGs). It is argued that the ruling has clarified the extent of the duty on planning authorities to consider submissions in relation to the continued relevance of the WEDGs. With regard to the Draft Revised WEDG 2019, it is stated that they have a number of technical errors, ambiguities and

inconsistencies and requires further detailed review and amendment. The EIAR states that in assessing the dWEGs, the WHO 45 dB Lden noise criterion was considered, which is based on a very limited data set, that only estimated the Lden for the sites studied, rather than assessing it directly from wind statistics. Furthermore, the EIAR highlights that the WHO recommendation is "conditional". In summary, the EIAR argues that it would be premature to adopt the WHO recommendations without further careful and detailed consideration and therefore this has not been adopted, and that the best practice guidance contained in ETSU-R-97 together with the detailed guidance contained in the Institute of Acoustics 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (May 2013) and its six supplementary guidance notes have been considered and applied to ensure a robust and best practice approach to the assessment.

8.11.13. Baseline noise monitoring was undertaken at 10 No. receptor locations surrounding the site. Under the Do-Nothing scenario, the noise environment would remain largely unchanged.

8.11.14. Construction phase noise was modelled using guidance and plant noise data from BS 5228:2009+A1:2014 and the EIAR assesses various activities with the potential to generate noise, including deliveries, removal of material to and from site, preparation of access roads, preparation of hardstands and drainage, pouring of foundations and installation of wind turbines. In all cases, the predicted noise is less than the daytime noise limit of 65 dB LAeq,1hr resulting in a not significant to slight temporary impact. The associated grid connection works may be above the 65 dB LAeq,1hr noise limit for short durations at a limited number of dwellings.

8.11.15. With regard to potential operational phase impacts, it is noted that the closest dwellings are at least 670m from the nearest turbine. An offset of 20m from buildings was utilised to account for their curtilage. The EIAR states that the Vestas V150 turbine with a hub height of 100m is proposed to be installed and as such the sound power level and octave band values for the turbine are based on the noise levels provided by the manufacturers. Table 7.12 outlines the wind turbine sound power levels for Vestas (V150) at varying wind speeds.

8.11.16. Table 7.15 of the EIAR sets out the predicted noise levels adjacent to the 10 receptor locations closest to the wind farm and at controlling properties adjacent to the wind

farm, the derived daytime and night-time noise limits at each location and the excess noise level, where relevant. The predicted noise levels are stated to be for a worst-case scenario with noise sensitive receptors downwind of the proposed wind farm, whereas in practice receptor locations will not be downwind of all noise sources and the actual noise levels will be lower than those presented in the EIAR. The predicted noise levels for each of the noise sensitive receptor locations are set out in Appendix 7.6 of the EIAR.

8.11.17. The EIAR concludes that the predicted noise levels from the proposed development are below the daytime and night-time noise levels, except at Receptor No. 167 (mixed use site) during daytime periods at a wind speed of 6m/s. I note from Table 7.15 that there will be an exceedance of 0.2dB at a wind speed of 6m/s at Receptor No. 167. In addition, it goes on to state that at some receptor locations a new source of noise will be introduced into the soundscape and it is expected that there will be a long-term moderate significance of impact on the closest dwellings to the proposed wind farm.

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

8.11.19. **Cumulative Impacts**

8.11.20. In terms of cumulative impacts during the construction phase, it is not expected that there will be cumulative impacts with other large or small scale developments in the vicinity.

8.11.21. In terms of operational phase cumulative impacts, the EIAR notes that the Rathnacally Wind Farm and Boolard Wind Farm are within 3km of the subject site. With reference to guidance contained in the IoA GPG, the EIAR states that the cumulative noise from these wind farms has been considered as the predicted noise from these wind farms is within 10 dB less of the predicted levels of the proposed Annagh Wind Farm, there will be a negligible cumulative impact.

8.11.22. Table 7.16 of the EIAR sets out the predicted cumulative noise levels adjacent to the 10 noise monitoring locations, with the predicted cumulative noise levels at all receptor locations set out in Appendix 7.7. It is stated that the cumulative predicted noise levels comply with the daytime and night-time limits at the majority of noise sensitive

locations with the only exceedance (by 0.3dB) during daytime periods at receptor No. 167 at standardised 10m height wind speeds of 6m/s. It is stated that the noise modelling assumed that this receptor is downwind of all wind turbines, but in practice, this will not occur all the time and the actual noise levels at the receptor will be lower when the receptor is upwind or cross wind of the wind farm.

8.11.23. **Mitigation Measures**

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

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

8.11.26. With regard to the requirement for operational phase mitigation, as noted above the predicted cumulative noise from the proposed project is above the daytime noise limit at receptor R167 at wind speeds of 6m/s. The EIAR states that to ensure the proposed wind farm is compliant with the daytime noise limit at receptor R167, some of the turbines will need to be operated in noise reduced modes of operation. The EIAR explains that it is possible to run the turbines in noise reduced modes of operation (NROs) whereby the noise level is lessened by reducing the rotational speed of the turbines, with a resultant loss of electrical energy production. Table 7.17 presents the sound power levels for the Vestas V150 for noise reduced modes of operation and a range of standardised 10m height wind speeds. It is stated that this mitigation will ensure compliance with the daytime noise limit at Receptor 167.

8.11.27. The EIAR states with mitigation, for some receptors sufficiently far from adjacent wind farms, a new source of noise will be introduced into the soundscape and it is expected that there will be a long-term slight to moderate significance of impact for dwellings within the 35 dB LA90 study area with a moderate significance of impact on the closest dwellings to the proposed wind farm.

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

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

8.11.30. Residual Impacts

8.11.31. No significant residual noise impacts are predicted in the wind farm construction and decommissioning stage, as activities will be below the construction noise limit of 65 dBLAeq,1hr at residential dwellings.

8.11.32. For the grid connection works, the identified temporary significant impact is mitigated to a moderate short-term residual impact with the use of temporary noise barriers/screens.

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

8.11.34. **Assessment**

8.11.35. Construction/Decommissioning Phase Noise Impacts

8.11.36. I note the range of activities associated with the construction phase, including excavations, civil works, foundation construction etc. as well as the short-term nature of the construction period for the proposed development. While no national limits are set for construction noise, I consider that the nature and extent of the works associated

with the proposed development would not be untypical of similar infrastructure projects and that the noise nuisance caused by construction activities would be short-term. The applicant has set out appropriate site management measures and protocols in the EIAR and associated CEMP which generally comprise good practice construction methods. I am satisfied that the implementation of these measures would be sufficient to reduce noise nuisance and disturbance during the construction phase to an acceptable level, noting the significant separation distances to the nearest residential receptors. Should the Board be minded to grant permission, I recommend that suitable conditions be attached regarding the CEMP and limits on the days and times when construction can be undertaken, thus reducing potential adverse impact to residents nearby. In conclusion, I do not consider that construction phase noise impacts would be significant.

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

8.11.38. Operational Phase Noise Impacts

8.11.39. Having reviewed the information submitted by the applicant in the EIAR, including its associated appendices and the response to Item No. 4 of the RFI to the Local Authority, I consider that a robust noise assessment, informed by adequate background noise monitoring, was undertaken. I note in this regard that the noise modelling utilised a number of conservative or worst-case assumptions, including that all noise sensitive locations are downwind of all wind turbines. As a result, the EIAR contends that the actual noise levels from the proposed development will be less than those predicted and the extent of required mitigation may also be reduced.

8.11.40. The assessment demonstrates that the proposed development complies with the daytime and night time noise limit criteria at noise sensitive receptors as per the WEDG 2006, subject to curtaining turbine operation at wind speeds of 6m/s during the daytime. Should the Board be minded to grant permission, I recommend that a suitable condition be included to limit daytime and night-time noise at noise sensitive receptors in line with the WEDG 2006 and that the applicant be required to submit and agree a

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

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

8.11.42. **Conclusion**

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

8.12. Land and Soil

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

8.12.2. Land and soil desk studies, field surveys and site investigations were undertaken. This included eight trial pits at selected turbine locations and at the proposed construction compound.

8.12.3. The majority of the turbine locations and associated infrastructure are located within areas classified as Alluvium, while the majority of the grid connection route is underlain by Till. No evidence of peat was recorded during the ground investigation works.

8.12.4. GSI bedrock geology mapping shows that the main wind farm site is underlain by the Copstone Formation, which is described as dark grey well bedded muddy limestone, and the Limestone Formation, which is described as a pale grey massive mud grade limestone. The north of the site is underlain by Caherduggan Limestone Formation

and Liscarroll Limestone Formation. The EIAR states that there is one main fault-line within the bedrock of the site boundary. The grid connection route traverses the Clare Shale Formation, described as mudstone, cherty at base.

8.12.5. The majority of the wind farm site and a portion of the proposed grid connection route are located within the Mitchelstown Groundwater Body (GWB), while the majority of the grid connection and northern extremity of the proposed site is underlain by the Rathnacally GWB. The Mitchelstown GWB is classified as have 'Poor' status and a risk result 'At Risk', while the Rathnacally GWB is classified as a 'Good' status and a risk result of 'Not at Risk'. The predominant aquifer type (73%) within the Mitchelstown GWB is classified RKD – Regionally important karstified aquifer dominated by diffuse flow, with the remaining (24%) consisting of LI – Locally important aquifer. Mitchelstown GWB is identified as intersecting with Designated Special Areas of Conservation (SAC) species including those in the Blackwater River (Cork/Waterford) cSAC. The primary aquifer type (88%) with the Rathnacally GWB is classified as Pu-Poor aquifer, while the remainder (12%) is classified as LI- Locally important aquifer.

8.12.6. There are no Public Water Supplies, Public Supply Source Protection Areas or Group Water Schemes within the boundary of the wind farm site. However, there are four Source Protection Areas for public water supply schemes in the vicinity of the site, the closest being Ballyagran, approx. 8km north of the proposed grid connection route. GSI data identifies one groundwater well within 1km of the site.

8.12.7. Groundwater Vulnerability within the proposed development is generally classified as 'Low' and 'Moderate' with localised areas classified as 'High', 'Extreme' and exposed bedrock (X). Based on the GSI aquifer vulnerability mapping, overburden deposits are generally <10m deep across the majority of the site.

8.12.8. The EIAR states that there are no karst features recorded within the proposed site. The site is not located within an area of geological heritage interest. There are also a number of quarries in the surrounding area, the closest being 5km from the site at Ballyhea, Charleville. It is noted that the GSI aggregates database indicates a low to high potential for crushed rock and moderate to high potential for granular aggregate at the site.

8.12.9. Site investigations found that Topsoil ranged from stiff CLAY to firm to stiff SILT and organic SILT deposits were encountered to a maximum depth of 0.35m BLG. The

topsoil was underlain by a layer of soft to stiff silt, locally organic to a depth of approx. 1.5m. Groundwater strikes were encountered at a number of trial pits at varying depths from 1.2m to 2.8m.

8.12.10. The slopes of the southern portion of the proposed development site is characterised by elevated lands with gentle slopes and typical elevations of between 90m to 110m AOD. Slopes with the proposed development and at proposed infrastructure locations generally comprise gentle slopes of between 1 to 4 degrees. Slopes at proposed turbine locations are classed as gentle (<3 degrees).

8.12.11. The GSI landslide susceptibility database locates the site within an area generally of 'low' susceptibility. The EIAR states that no evidence of slope instability was observed and that there are no historical records of landslide activity in the vicinity of the site. Given the low slope angles recorded across the site and the presence of competent ground as recorded in the site investigation, the EIAR states that no slope stability issues are anticipated across the site.

8.12.12. The Applicant highlights that as no peat deposits were recorded, a peat stability assessment was not undertaken.

8.12.13. There are no known areas of soil contamination on the proposed development or the grid connection route.

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

8.12.15. During the construction phase, potential direct impacts primarily relate to tree felling, earthworks, slope stability, construction of roads and hardstandings, excavation, cabling works, and the grid connection and turbine delivery route works. The nature of the potential impacts are related to soil compaction, soil erosion, slope failure, soil/groundwater contamination and sediment/nutrient run-off to surface waters. The EIAR considers the significance of these impacts, prior to mitigation, to be significant as the underlying groundwater is identified as intersecting with the Blackwater River (Cork/Waterford) cSAC.

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

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

8.12.18. Cumulative Impacts

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

8.12.20. Potential cumulative impacts are also considered with respect to the existing Rathnacally Wind Farm, Boolard Wind Farm, Ballyroe Solar Farm, Charleville Solar Farm, the M20 Limerick to Cork project and the forestry replant lands. No significant cumulative impacts on land, soils and geology are identified with respect to the existing projects and the replant plants. However, it is stated that there could be significant cumulative impacts should M20 Limerick to Cork project and the permitted solar farms be constructed simultaneously due to groundwater pollution.

8.12.21. Mitigation Measures

8.12.22. The proposed mitigation measures include mitigation by design and best practice, including site investigations, slope stability assessment and the positioning of turbines and site infrastructure on low slope gradients. It is stated that all works will be subject to design risk assessment and detailed method statements, with supervision by suitably qualified geotechnical personnel.

8.12.23. Other mitigation measures during the construction phase include compliance with a CEMP, a copy of which is included as an Appendix to the EIAR. The measures include: surface water management; fuel/oil storage and spill management measures; refuelling protocols; retention of excavated overburden on-site for use in bunding and landscaping; use of site-won material for general fill; marking-out of works corridors to minimise soil compaction; backfilling of excavations at soon as possible and avoidance

of excavations/earthworks during heavy rainfall events; temporary support of excavations; maintenance of existing 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; groundwater monitoring; provision of alternative water supply in event wells are impacted; installation of clay plugs at intervals to prevent cable trenches becoming preferential pathways for water flow.

8.12.24. The EIAR states that the proposed mitigation measures will ensure that the proposed development will have an imperceptible cumulative impact should it be constructed simultaneously as the M20 Limerick Project and the two neighbouring consented solar farms.

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

8.12.26. Mitigation measures during decommissioning will be similar to the construction phase, although it is noted that some impacts will be avoided by leaving some sub- surface elements in place (turbine bases, access tracks etc.). No mitigation measures are considered necessary to address cumulative impacts, given the lack of potential significant impacts identified.

8.12.27. **Residual Impacts**

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

8.12.29. **Assessment**

8.12.30. As outlined above, the majority of the wind farm site and a portion of the proposed grid connection route are located within the Mitchelstown Groundwater Body (GWB). This GWB is identified as intersecting with the Blackwater River (Cork/Waterford) cSAC.

8.12.31. The Local Authority's first reason for refusal related to the Planning Authority been unable to determine beyond reasonable scientific doubt that the proposed

development, either individually and/or in-combination with other plans and projects will not have an adverse effect on qualifying interests species and the integrity to the Blackwater River (Cork/Waterford) cSAC. On review of the Planner's Report, I understand that these concerns relate to surface water, as opposed to groundwater.

8.12.32. I highlight that sections 2(a) and 2(b) of the Local Authority's RFI requested the Applicant to assess the potential for increased risk of groundwater pollution and assess the potential hydrogeological impacts on the Blackwater cSAC, respectively. In addition, the Local Authority requested the Applicant to clarify if a borrow pit (which was referenced in section 7.2 of the noise chapter) was proposed. In response, the Applicant stated that the EIAR outlines that there could be significant hydrogeology impacts resulting from the development during the construction phase without mitigation measures being implemented. The Applicant advised that this was a conservative approach in describing the worst-case scenario and is not an indication of actual impacts, as mitigation measures are designed to ensure the proposed development will not hydrogeologically impact the Blackwater cSAC. The relevant mitigation measures proposed in Chapter 9 of the EIAR were reiterated in the RFI Response including compliance with a CEMP which includes backfilling excavations as quickly as possible, not excavating in heavy rainfall periods, fuel/oil storage and spill management measures, and refuelling protocols. In addition, groundwater monitoring wells will be installed between areas of deeper excavations and sensitive groundwater receptors, including the cSAC. The Applicant stated that only small scale temporary dewatering will be very localised and of small magnitude due to the nature and permeability of the subsoil geology, which comprises moderate to low permeability alluvium and glacial deposits. Dewatering is not expected to cause interference with the cSAC due to the large offset distance, relatively shallow depths of excavation and temporary short-term nature of dewatering, if required. Furthermore, the Applicant advised that the reference to the borrow pit in EIAR was a typographical error. I note that the Local Authority's Environmental Officer was satisfied with the Applicant's response. I consider that a suitably detailed and comprehensive range of measures has been proposed to ensure that no significant hydrogeology impacts will arise as a result of the proposed development.

8.12.33. **Conclusion**

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

8.13. **Water**

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

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

8.13.3. The wind farm site is situated within the Awbeg (Buttevant) _SC_010 sub-catchment. Turbines T1, T3 and T6 are situated within the Oakfront_010 sub-basin and T2, T4, and T5 are within Awbeg (Buttevant) West_020 sub-basin. The grid connection route to the Charleville substation traverses the Oakfront_010 sub-basin and Awbeg (Buttevant)_010 sub-basin. The EIAR highlights that the main hydrology features within the wind farm site are the Ardglass Stream (also referred to as Fiddane Stream) and Oakfront Stream, which both drain into the River Awbeg (Buttevant) West approx. 1.3km downstream of the site. This River forms part of the Blackwater River (Cork/Waterford) cSAC. The eastern and central parts of the site drained by forestry and field drains which ultimately join the Oakfront Stream, while the western parts drains to the Ardglass Stream.

8.13.4. The EIAR states that according to PFRA maps parts of the wind farm site is prone to fluvial flooding.

8.13.5. The river status and waterbody risk of the Awbeg (Buttevant)- West_020 are classified as ‘Poor and ‘At Risk’ for the period 2012-2018. River status and waterbody risk for Oakfront_010 is ‘Unassigned’ and ‘Review’. The EIAR states that in waterbodies where data confidence was very low, the status was set as ‘unassigned’, even where the conservation status was considered to be favourable. For waterbodies associated with grid connection, the river status is ‘Unassigned’ and ‘Good’. Waterbody risk of the

sub-basins associated with GCR is under 'Review'. Waterbodies classified as 'Review" are reviewed by the EPA.

8.13.6. There are no water quality stations along Ardglass and Oakfront Streams, however the closest stations (located at the River Awbeg (Buttevant) West and Rathnacally Stream) have Q-value biological water quality ratings from 2-3 (Moderately Polluted) to 4 (Unpolluted).

8.13.7. The grid connection route from the proposed 110kV substation at Charleville to the proposed on-site substation crosses the Rathnacally Stream.

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

8.13.9. During the construction phase of the wind farm, it is stated that the potential direct impacts are primarily associated with impacts on water quality in receiving waterbodies and increases in run-off. The nature of the potential impacts include:

- The overall estimated increase in the unmitigated peak runoff due to the wind farm is 0.174 m3 /s (or 0.20 %) for a 1 in 100 years storm event. Without mitigation the EIAR states that the significance of the effect of the increase in runoff is "Not Significant" on receiving waters because estimated increases in the peak runoff is low compared to the flows of receiving waters and not being concentrated at one point.
- Release of suspended solids to surface watercourses could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies, if the appropriate mitigation measures are not put in place. It is stated that this could have a 'significant' impact on receiving waters.
- Release of hydrocarbons into the receiving waters is anticipated to have a 'slight' impact as due to the low likelihood and low quantities involved.
- Release of sanitary waste into the receiving waters is anticipated to have a 'slight' impact as its unlikely that a huge amount of sanitary waste could be released into the environment.

- Release of cement-based products is anticipated to have a ‘moderate’ impact as it is stated that it is unlikely that a huge amount of cement based products could be released into the environment.
- Potential impacts from tree felling include release of sediments and nutrients to watercourses. The EIAR states that release of nutrients would have a ‘moderate’ impact on receiving waters.

8.13.10. In terms of the works associated with the grid connection, the EIAR states that the potential impacts include suspended solids and release of hydrocarbons. It is anticipated that these would both have a ‘slight’ impact on water quality.

8.13.11. No significant impacts are anticipated from the turbine delivery route works.

8.13.12. In terms of the operational phase, the EIAR states that due to the proposed grassing over of drainage swales and revegetation of other exposed surfaces, and the non-intrusive nature of operations, there is a negligible risk of sediment release to the watercourses. Potential impacts from small oil spills associated with cooling the transformers are not considered to be significant. With regard to the decommissioning phase, the impacts are expected to be similar, but to a lesser degree than the construction phase as drainage swales would be mature and it is proposed to leave some elements, such as access tracks and turbine foundations in situ. No significant impacts are identified.

8.13.13. Section 10.5 of the EIAR states that the proposed development is within Flood Zone A, however the turbines and substation are located within Flood Zone C. The proposed crossing point over the Oakfront stream is sized to cater 1% AEP MRFS event flows. It is stated that this will allow for the site to be accessed during extreme storm events. No increase in flood risk is anticipated due to the grid connection or turbine delivery route works.

8.13.14. **Mitigation Measures**

8.13.15. The proposed mitigation measures include mitigation by design, with an appropriate drainage design stated as being the primary mitigation measure. A Surface Water Management Plan is included in Appendix 10.3. Following the implementation of the these measures the potential impacts on hydrology and water quality are expected to be ‘not significant’. The drainage system design retains existing access roads and

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

8.13.16. It is proposed to divert an existing field drain which runs in a west-east direction and feeds into the Ardglass Stream. It is proposed to divert this drain around the footprint of the proposed turbine T4. Due to the small area draining towards this drain, it is stated that it is unlikely this will have a significant negative impact on the local drainage and the flood risk.

8.13.17. Other mitigation measures during the construction phase are outlined in Section 10.7 of the EIAR to mitigate the potential impacts identified above. These generally comprise good practice measures such as 50m buffer zones from streams (except for watercourse crossings), water quality monitoring, silt fencing, construction of a stone dam within a ditch to prevent water ingress for the diversion of an existing field drain, appointment of an Environmental Clerk of Works, erosion control measures, refuelling protocols, washing of concrete truck chutes, no batching of concrete or wet cement within the wind farm site, use of weather forecasting prior to concrete pours, provision of spill kits, and compliance with the CEMP, a copy of which is included as an Appendix to the EIAR. With regard to monitoring, it is proposed to take monthly water samples during ground disturbance works.

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

8.13.19. Specific detailed mitigation measures are proposed for the tree felling operation, prior to the construction of the wind farm access tracks and hardstandings. These primarily

comprise enhanced silt and sediment control measures and measures to prevent soil erosion.

8.13.20. Similar mitigation measures are proposed for the grid connection works and turbine delivery route works.

8.13.21. In the operational phase, the main hydrological impact is the increase in run-off which will be mitigated by the drainage system. The system will increase time of concentration and decrease peak run-off. Mitigation during maintenance operations will include provision of spill kits, restrictions on refuelling locations, and bunding of transformers. The maintenance regime will include inspection of the drainage system, removal of blockages etc. as well as water quality monitoring.

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

8.13.23. As stated above, following the implementation of the mitigation measures the potential impacts on hydrology and water quality are expected to be 'not significant'.

8.13.24. **Cumulative Impacts**

8.13.25. With regard to cumulative impacts, I note that the EIAR considers the potential impacts of the overall development including the grid connection and turbine delivery route. Potential cumulative impacts are also considered with respect to the existing Rathnacally Wind Farm, Boolard Wind Farm, Fiddane Solar Farm, Ballyroe Solar Farm, replanting lands in Emalgh, Co. Clare, M20 Cork to Limerick Project, Knockatig Wind Farm, Castlepook Wind Farm, Kilberrihert Wind Farm, Kilmeedy Wind Farm, Dromdeeveen I & II Wind Farm, a private turbine proposed 12km west of the wind farm site. No significant cumulative impacts on water quality and hydrology are identified.

8.13.26. **Residual Impacts**

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

8.13.28. **Assessment**

8.13.29. Increased Run-off and Flooding

8.13.30. A number of observations submitted to the Local Authority raise concerns in relation to the proposed development's potential to displace water and as a result increase run-off and flood risk. In particular, Eve and Brendan Sweeney in their observation express concern that their dwelling may be flooded as a result of the proposed development. I note that their dwelling is approx. 750m southeast from the closest Turbine (T3).

8.13.31. 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. Table 10-7 of the EIAR sets out the runoff to the two appliable sub-basins and indicates that the overall unmitigated increase in runoff for a 1 in 100 year storm event will be 0.174m3 /s (an increase of 0.2%). Appendix 3 of the Surface Water Management Plan outlines the preliminary design for each of the settlement ponds. The total capacity of the 22 No. proposed settlement ponds is 1,915.94m3 for a 1-in-10 year return period storm of 60 minutes, which would sufficiently accommodated the 0.174m3 /s for a 1-in-100 year return period storm of 60 minutes.

8.13.32. Appendix 10.2 (Flood Risk Assessment) states that Preliminary Flood Risk Assessment (PFRA) maps illustrate that the Oakfront Stream floods within the site boundary for the 1% AEP (Flood Zone A) storm event. It is stated that the site is located in an area not included in the CFRAM study. Reference is made to a Cobh and West Cork Municipal District Local Area Plan 2017, which illustrates that the site is located in Flood Zone A and B. Furthermore, it is stated that the lands are within the 'Drainage Districts', which are described by OPW as lands that might benefit from the implementation of arterial (major) drainage schemes and areas that may be subject to flooding or poor drainage. The EIAR states that GSI data indicates that the site is at low risk of groundwater flooding. Section 4.2 of the Flood Risk Assessment states that there are few isolated and ponded areas subject to localised waterlogging after periods of prolonged rainfall. It is noted that there is no urban drainage

infrastructure in the immediate vicinity of the site. There are no significant or restrictive hydraulic infrastructures located in the vicinity of the site. Whilst there are no recorded flood incidents within the site, there is a recurring flood incident at Annagh Bogs (Flood ID2381), located southwest of the subject site. Following the Stage 1 Flood Risk Assessment, it was determined that the subject site is at risk of fluvial and pluvial flooding.

8.13.33. Section 5.1 of the Flood Risk Assessment highlights that there is no suitable historical flow data or hydrometric gauging station data available from the OPW or EPA for the Oakfront Stream catchment area from which an estimation of design flow can be extrapolated or correlated. Utilising the OPW Flood Studies Update web portal, the catchment area of the Oakfront River was delineated. Furthermore, it is stated that as the catchment area is less than 25km^2, the Flood Studies Update (FSU) method is not appropriate to estimate the median or mean flows. As such, the mean annual flow, QBAR (m3 /s), was estimated by utilising three multiple parameter regression equations detailed in the Flood Studies Report (FSR) and Flood Studies Supplementary Reports (FSSR), Flood Estimation in Small and Urbanised developed as part of the Flood Studies Update (FSU) Programme, and the Institute of Hydrology Report (IH) No. 124 'Flood Estimation for Small Catchments' regression equation. The results from FSSR6 were adopted to calculate peak flows at four sections of the Stream (illustrated on Figure 5.1 of Appendix 10.2) as it provided higher values than IH124. (FSU-SC approach was not adopted as it is stated that further testing would be required in accordance with the Flood Studies Update WP4.2 Flood Estimation in Small and Urban Catchments.)

8.13.34. Section 6.0 of the FRA states that in order to assess flood risk at the site, a flow capacity of the Oakfront Stream was undertaken using Manning's equation. A cross sectional and geometry survey of the channel was undertaken during the site inspection at four locations along the Stream (Figure 5.1 of the FRA). Table 6.2 of the FRA summarises the flow capacity of the drainage watercourse channel at each surveyed location. The FRA states that hydraulic analysis demonstrates that the Oakfront Stream has enough capacity to cater 1% AEP flows at analysed locations. It was determined that the Oakfront Stream does not overtop at these locations for extreme flood events (1%AEP and 0.1%AEP). Having regard to the findings of the FRA, the Applicant stated in the RFI Response that no significant impacts due to

floodplain loss are anticipated. It is noted that the construction area (9.03 ha) only forms a low proportion of the sub-basin areas (3,853ha).

8.13.35. As outlined above, the proposed drainage design is based upon the retention and dispersal of surface run-off and there will be no direct discharge into the Oakfront Stream (or any waterbody).

8.13.36. 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.

8.13.37. Water Quality Impacts

8.13.38. Observers raise concerns in relation to potential changes in water quality and impacts on the groundwater. 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. The EIAR and associated CEMP and SWMP set out a range of mitigation measures and pollution prevention measures, as outlined above. The measures include both mitigation by design and other mitigation including provision of roadside swales with silt traps, check dams, settlement ponds with overland diffuse outfalls and silt fencing. Runoff from the on-site substation roof will be collected in a water harvesting tank, and wastewater will be drained to a holding tank and regularly emptied. The site compound will be surrounded by a swale with runoff passing through an oil interceptor prior to overland discharge. The other mitigation measures proposed generally comprises good practice measures such as 50m buffer zones from streams (except at water crossings), water quality monitoring, erosion control measures, refuelling protocols, washing of concrete truck chutes, provision of spill kits, emergency response measures, and compliance with the CEMP. No batching of wet cement products is proposed on the wind farm site. Furthermore, no borrow pits are proposed. The excavations for turbines will be pumped into the site drainage system.

8.13.39. The river status and waterbody risk of the Awbeg (Buttevant) - West_020 are classified as ‘Poor’ and ‘At Risk’ for period 2012-2018. Both the Ardglass and Oakfront Streams flow into the Awbeg River. As outlined above, the proposed drainage system includes for diffuse outfalls over the site. There is a risk that the increased run-off could in turn increase the nutrient load on waterbodies thereby impacting on the status of the

Awbeg River. I do not consider this to be a significant risk, having regard to the number and size of settlement ponds included within the drainage system. However, should the Board be minded to grant permission for the proposed development, it may wish to condition that the rate of discharge from the diffuse outfalls be monitored.

8.13.40. In addition, I noted that it is proposed that concrete trucks will wash their chutes into a lined pit provided at each turbine location and substation compound. It is not clear what regard has been given to the fine nature of this material in terms of the sizing and rate of discharge from the pits. I consider that this matter could be confirmed with the Local Authority prior to the commencement of proposed development. Alternatively, the Board may wish to condition that the material is stored in a contained pond with no outfall on site and disposed off at an appropriate location to be agreed with the Local Authority prior to the commencement of the development. Having regard to the volume of material from the cleaning chute and the extent of the mitigation measures included (lined pit), I do not consider this issue to be of such a significance, to recommend that permission be refused, but rather I am satisfied that it is a matter that could be addressed via condition.

8.13.41. The Applicant confirmed in the RFI Response that no in-stream works are proposed. Oakfront Stream will be crossed with a clear span bridge and the Rathnacally Stream will be crossed using HDD. The RFI Response highlights that a Section 50 application will be required from the OPW for the construction of the bridge. The Applicant has committed to culverting the relevant manmade field drains during dry conditions. As stated above, one field drain next to T4 will be diverted around the base. The field drains/ manmade agricultural and forest drains will be culverted to take the 1 in 100 year flood flow with a 20% allowance for climate change. The Applicant has committed to carrying out these works in during dry periods.

8.13.42. The new turbine hard-standing areas will be drained via shallow swales and settlement ponds. The Applicant stated in the RFI Response that temporary reductions in groundwater levels by temporary dewatering will be very localised and of small magnitude due to the nature and permeability of the subsoil geology, which comprises moderate to low permeability alluvium, and glacial deposits. Due to the relatively shallow depths of excavation and temporary short-term nature of any dewatering if required, and in the absence of any conflicting evidence, in my view, it is unlikely that the proposed development would adversely impact groundwater, subject to the

implementation of the mitigation measures outlined in the EIAR, CEMP and SWMP. The Applicant has committed to monitoring groundwater, with the installation of groundwater monitoring wells between areas of deeper excavation and sensitive groundwater receptors (including the Blackwater River (Cork/Waterford) cSAC). Section 3.2.1.1 of the RFI Response outlines that the wells will be used to monitor groundwater levels and quality to assess any potential impacts during the construction works. The Applicant states that the dewatering of the foundation excavations is not expected to cause interference with domestic wells in the area due to the large offset distance to known wells, relatively shallow depths of excavation and temporary short-term nature of dewatering. Should the Board be minded to grant permission for the proposed development, I recommend that details of the groundwater monitoring be agreed with the Local Authority prior to the commencement of the development. In addition, I recommend that the details in relation to the disposal of the dewatering substance be agreed with the Local Authority. Having regard to the above, I do not consider that there would be significant adverse impacts on water supply in the area or groundwater quality.

8.13.43. Section 4.6 of the SWMP outlines that the water quality monitoring plan will include daily visual inspections of drains and outfalls to ensure suspended solids are not entering the streams and rivers of the site, to identify any obstructions to channels, and to allow for appropriate maintenance of the drainage regime. The Applicant commits to stopping construction work, if excessive suspended solids are noted and remediation measures will be put in place immediately. A detailed water quality monitoring programme will be undertaken during the construction phase of the proposed development, in addition to the visual inspections outlined above, so as to ensure the effective implementation of the proposed mitigation measures. Field measurements and grab samples will be taken at suitable locations, which will be decided prior to the construction phase commencing. The field measurements will be recorded at the site and will include measurement of the following parameters, electrical conductivity (µs/cm), pH, temperature (ºC), suspended solids (mg/l) and dissolved oxygen (mg/l). It is stated that field measurements will be taken on a weekly basis during the site clearance and earthworks stage of the construction period. An ECOW will compare the results with the pre work levels and ensure that designed mitigation measures are working. An ECOW will propose new mitigation measures if

results exceed pre work levels. In my opinion, the mitigation is appropriate, however should the Board be minded to grant permission for the proposal, I recommend that the field measurements and monitoring be continued throughout the construction phase (i.e. not limited to site clearance and earthworks stage) and three months following completion of the wind farm. Furthermore, I recommend that the specific details, e.g. sample locations, are agreed with the Local Authority prior to the commencement of the proposed development and that the results of same are submitted to the Local Authority.

8.13.44. 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, I am satisfied that the potential impacts of the proposed development on water quality can be adequately mitigated and that the proposed development will not have a significant residual impact on water quality.

8.13.45. Conclusion

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

8.14. Traffic and Transportation

8.14.1. Traffic and Transportation are addressed in Chapter 13 of the EIAR.

8.14.2. The EIAR assessment makes use of field surveys, data counters, desktop studies, consultation (TII and Cork County Council Roads Authority) and utilises guidance published by TII and the EPA. While a 12 - 18 month construction programme is envisaged, the EIAR assumes a compressed 12 month construction programme for the purposes of construction traffic generation calculations and a ‘worst case’ assessment.

8.14.3. The proposed access to the site incorporates an existing agricultural entrance on the L1322 to create a bellmouth shaped entrance to facilitate turbine delivery. A new

access point is also proposed east of the existing agricultural entrance and immediately west of a single storey residential property. Post construction access to the agricultural lands and the wind farm will be via the new access point. It is proposed that the entrance will be in accordance with TII technical guidance. The EIAR states that this entrance was chosen in order to achieve sightlines to the east where it was required to align with the L1322 and comply with TII design requirements.

8.14.4. A secondary entrance is proposed from the south to the site from an unnamed local road, which utilises an existing agricultural laneway. It is proposed that this entrance will be used for the construction and operation of the 100m met mast only and will not be used for construction of other elements of the project.

8.14.5. With regard to potential impacts, in the 'do-nothing' scenario, there will be no change to the current road network and existing traffic patterns in the area.

8.14.6. In the construction phase, there will be additional construction related traffic on the existing public road network over the duration of the construction works, including: HGVs transporting construction material, excavated material and electrical components and earthworks machinery; fuel trucks; Light Goods Vehicles; and oversized loads, including turbine components.

8.14.7. 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. Similar potential impacts arise in respect of the cable route and turbine delivery route works. Additional potential impacts are identified in respect of temporary road closures and diversions during cabling works.

8.14.8. The construction phase for the entire project will lead to 16,266 additional HGV trips (two-way) over the duration of the construction works, with an average daily increase of 53 HGV trips per day over the 12-month construction period. This increases to an average of 84 HGV trips per day during the peak month which occurs in month 6 of the programme for HGV traffic. The average workforce of 30-40 persons is estimated to give rise to an increase of LGV traffic of 36 trips per day on average, rising to 44 trips during peak periods for LGV traffic during months 7, 8 and 9.

8.14.9. The combined HGV and LGV average daily increase is 88 trips per day throughout the construction programme. Table 13-7 of the EIAR sets out the predicted AADT during

the construction phase with this average daily traffic and the impact on the surrounding road network. The busiest period during the construction programme is expected to occur in month 6 when combined HGV and LGV traffic increases to 115 average daily trips. Table 13-8 of the EIAR sets out the predicted AADT during this peak month and the impact on the road network.

8.14.10. Considering the wind farm separately from the grid connection works (which will be isolated from the wind farm site and largely independent) a total of 14,590 additional HGV trips (two-way) over the duration of the construction works are anticipated, with an average daily increase of 47 HGV trips per day rising to a peak in month 6, where average daily HGV trips rises to 84. The average workforce of 25 persons, increasing to 30 persons during peak periods is calculated to give rise to an average daily increase of 34 LGV trips per day, increasing to 44 LGV trips per day in the peak periods. Table 13-10 of the EIAR sets out the predicted AADT during the construction period and the impact on the road network. I note that existing traffic count was not available for the L2026 and a low traffic volume of 500 AADT was assumed with a HGV/LGV split in line with nearby local roads.

8.14.11. The windfarm construction works will result in traffic volumes on the M20 and N20. The L1322 will see a more significant temporary increase in traffic volumes over the course of the construction phase of c. 37.45%.

8.14.12. In terms of the grid connection phase, it is stated that these works will lead to 1,675 additional HGV trips (two-way) over the duration of the construction works an average daily increase of 5 HGV trips per day over the course of the overall project construction programme). The workforce associated with this activity is expected to give rise to an average daily increase of 2 LGV trips per day over a total construction programme period of 3 months. The combined HGV and LGV average daily increase is 7 trips per day throughout the overall project construction programme and 28 over a 3-month grid connection works construction programme. The EIAR states that adverse impacts associated with the works will therefore be experienced on the road network in the immediate vicinity to the works area. It highlights that should the construction of the grid connection works be split over two or more works areas, it would result in a significant reduction in overall construction time. This approach would also have the effect of increasing the overall average number of construction vehicle trips per day

associated with the construction of the grid connection, albeit over a shorter timeframe. A temporary road closure will be required for the HDD.

8.14.13. The EIAR considers the adverse effects on the receiving environment associated with the construction works at the main wind farm site to be short-term in duration and slight to moderate in significance without appropriate mitigation.

8.14.14. In the operational phase, trip generation is anticipated to be minimal as the wind farm will be operated remotely, with traffic primarily associated with maintenance staff and environmental monitoring/compliance staff. Additional operational phase traffic may arise in the case of unforeseen or unplanned events such as emergency turbine repair works.

8.14.15. In the decommissioning phase, traffic will be associated primarily with the removal of aboveground turbine components. It is proposed to leave other elements such as foundations and access tracks in place and the traffic impact associated with the decommissioning phase is stated to be temporary in duration and slight in significance without mitigation.

8.14.16. **Cumulative Impacts**

8.14.17. The potential for cumulative impacts is considered with respect to the replanting works in Emlagh, Clare, Fiddane Solar Farm, Charleville Solar Farm and the M20 Cork to Limerick Scheme. No cumulative impacts are associated with regard to the replanting works. In terms of the two neighbouring permitted solar farms, the EIAR states that it is expected, if developed, these projects will be constructed in advance of the proposed project, and as such no cumulative impacts would occur. In respect of the M20 Cork to Limerick Scheme, the EIAR states that measures contained within the construction stage TMP will ensure traffic management measures for both projects do not conflict.

8.14.18. **Mitigation Measures**

8.14.19. The principal mitigation measure proposed is compliance with a Traffic Management Plan (TMP). A TMP was included as part of the CEMP in Appendix 3.1 of the EIAR, and it is proposed that this will be developed further prior to commencement by the main contractor in consultation with the roads authority.

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.
- Road closures may be required. Such closures would be agreed with the roads authority in advance of construction and diversions would be incorporated into the traffic management plan.
- Reinstatement of all roads to their pre-works condition or better and to the satisfaction of the roads authority on completion of the construction works.
- Site inductions to address traffic management and provide guidance on the routes to be used/not used to access the site.
- Maintenance of a 24-hour emergency phone number for the duration of the construction works.
- Planning and execution of all necessary temporary traffic management in accordance with best practice, including the Traffic Signs Manual.
- Letter drops to notify members of the public living near the proposed site and cable route of any particular upcoming traffic related matters (e.g. temporary lane/road closure or delivery of turbine components).
- Provision of clear signage for accessing the site.
- Use of a road sweeper to maintain the public roads in a clean condition.
- Securing of site entrances when not in use and use of a flagman to assist traffic movements at the site entrance or in other areas, as required.
- Delivery of abnormal loads in accordance with an abnormal load permit and at times and frequencies directed by An Garda Siochána.

8.14.20. 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; grid connection works will be planned to avoid conflicts with other major activities on the main construction site such as concrete foundation pours and large component deliveries; and management of grid connection works and with the delivery of the turbine components to ensure no overlap.

8.14.21. 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.

8.14.22. In terms of the southern site entrance, the EIAR states that it will be used only for construction of a new section of track to access the met mast location and for installation of the met mast. As appropriate sightlines are not achievable at the site entrance a banksman will control traffic at this location.

8.14.23. During the operational phase, the EIAR states that the site entrances shall be maintained continually to ensure conditions at these entrances do not deteriorate. It is highlighted that hedgerow maintenance will be required to ensure continued visibility at the entrances. In terms of the southern entrance, the EIAR states that it will only be used for maintenance purposes resulting in no more than one or two vehicles on a quarterly basis. It is advised that the existing agricultural activity will continue on this laneway.

8.14.24. 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.

8.14.25. **Residual Impacts**

8.14.26. No significant residual impacts during construction, operation or decommissioning are anticipated.

8.14.27. **Assessment**

Sightlines

8.14.28. As outlined above, the Local Authority's third reason for refusal relates to the poor condition and alignment of the L1307-30[7] in proximity to the proposed site entrance and inadequate provision of vehicular sightlines and a safe vehicular entrance onto the public road. The proposed development was considered to conflict with Objective TM 12-8(d) of the Development Plan, which requires that all new vehicular accesses are designed to appropriate standards of visibility to ensure the safety of other road users. The Applicant advised as part of the RFI Response (Item No. 5(b)) that the proposed new site entrance (Access 1) is to facilitate the turbine delivery route. The proposed bellmouth entrance will combine both the existing agricultural entrance (Access 2) and proposed new entrance point (Access 1) into one main site entrance for the wind farm. The RFI Response notes that the 'S' bend near the proposed main wind farm entrance has poor visibility due to the tree canopy and vegetation along the roadside. The Applicant argues that on removal of this vegetation, forward visibility at this bend will increase significantly. As part of the First-Party Appeal, the Applicant states that Dwg. Nos. P2359-0100-0004 and P2359-0103-001 illustrate that 160m sightlines, setback 3m from the road edge, are available at the site entrance and as such the proposal is compliant with TII standards DN-GEO-03060. Furthermore, Dwg. No. P2359-0103-0011 (Rev. B) submitted with the Appeal illustrates 90m sightlines, setback 4.5m from the road edge, at the entrance. Having visited the site, I note that visibility from the proposed entrance (Access 1) would be very poor due to the horizontal alignment of the road and the hedgerows, but I concur with the Applicant that forward visibility would significantly improve as one travels in either direction along this section of the road post-construction, should the lands between the 160m sightlines be kept clear of visual obstructions as stated on the aforementioned drawings. I am satisfied that adequate sightlines can be achieved at the proposed main entrance point and subject to a detailed construction traffic management plan

[7] This local road is also known as the L1322.

being agreed with the Local Authority prior to the commencement of the development would ensure that the proposed development would not represent a traffic hazard. (As noted above this would require the removal of a significant number of trees and vegetation. This is assessed in Chapter 8 of the EIAR. See Section 8.10 below.) With respect to the various accommodation works at the entrance (and identified along the TDR), I note Section 34(13) of the Act states that a person shall not be entitled solely by reason of a permission to carry out any development. Should the Board decide to grant permission, the developer will still have to be certain under civil law that they have all necessary rights or consents to execute the grant of permission.

8.14.29. In terms of the road condition, I note that the Applicant has proposed to undertake pre- and post-construction condition surveys to a specification and timing to be agreed with the local authority and to reinstate all roads to their pre-construction condition or better to the satisfaction of the local authority. 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, including the Rathnacally Wind Farm, 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.

8.14.30. This matter can be adequately addressed by way of condition, should the Board be minded to grant permission.

As noted in the First-Party Appeal, use of an existing access from the L5528 to construct the proposed mast did not form part of the Local Authority's refusal, however I highlight that the Local Authority's Transportation Department objected to this part of the proposal on the grounds that the route was unsuitable due to a number of bridges. The First-Party Appeal states that the construction of the mast is minor in nature and the temporary effects of construction traffic will be minimal. Having visited the area, acknowledging the minor nature of the works and subject to a detailed construction traffic management plan (including a banksman during the construction phase of this aspect of the project to control traffic) being agreed with the Local Authority prior to the commencement of the development, I am satisfied that this aspect of the proposed development would not have significant impacts on the L5528 and as such, in my view, it would be unreasonable to refuse planning permission on this basis.

Construction Traffic

8.14.31. A number of third party observations submitted to the Local Authority have raised issues relating to traffic and transportation, including road safety, capacity to accommodate HGV traffic, and impacts on other road users including walkers, cyclists and horse riders. Having regard to the nature and scale of the proposed development, it is clear that the greatest potential for negative impacts on traffic and transportation arises during the construction phase, since there will be minimal traffic generated during the operational phase. I note that the Local Authority's refusal reason did not relate to the volume of traffic likely to be generated from the proposed development. Having regard to the reasonably good condition of the L1322, the sparsely populated rural nature of the site, the low level of traffic currently utilising the roads, the short term and temporary nature of the construction impacts, and subject to the implementation of the various mitigation measures as outlined in the CEMP, I consider that a robust Construction Traffic Management Plan could adequately address the concerns expressed by the third parties.

Tree Felling

8.14.32. I highlight that while Chapter 13 makes reference to tree felling in the project description, it does not specifically assess the impacts from this element of the proposed development. However, having regard to the relatively small area to be felled (12.6ha) and the corresponding short duration required to complete the subject works, I do not consider that these works would have a significant impact on the local road network.

Cumulative Impacts

8.14.33. The EIAR states that it is expected, if developed, that the two permitted neighbouring solar farms will be constructed in advance of the proposed project, and as such no cumulative impacts would occur. Should the solar farm projects be developed in advance of the wind farm development, I concur with the EIAR's assumption in this regard. However, should all three projects in addition to the other projects referenced in Section 4.0 of this Report be developed simultaneously, I consider that such a scenario would have a significant impact on the local road network without appropriate mitigation. I note that there are conditions attached to the permitted developments relating to the traffic management during the construction phase. While I accept that

there would likely be short-term temporary negative impacts on the receiving environment due to construction traffic, they would be of a type that lend themselves to effective mitigation through a comprehensive CTMP and suitable planning conditions.

Ducting

8.14.34. During the Local Authority's assessment of the case, the Transportation Department requested that the Applicant enter into discussions with the developer of Fiddane Solar Farm (Reg. Ref. 17/5799) to utilise the same duct along the public road for the wind farm as that permitted for the solar farm. The Department stated that failure to do so will result in a refusal on grounds of over intensification of utility services on a rural road, which has no capacity for additional ducting. However, there is no evidence before the Board indicating that the road has no capacity for additional utility services. Whilst there is a strong environmental (and most likely financial) justification for such a proposal, in my view, it would be *ultra vires* for the Board to insist on such a proposal, should permission be granted for the proposed development.

Operational Traffic

8.14.35. In terms of the operational phase, I concur with the Applicant's assessment that the impacts will not be significant, due to the nature of the proposed development and the minimal traffic it will generate. With regard to the decommissioning phase, the nature of works will be similar to the construction phase, but the extent of works will be substantially less due to the foundations and other infrastructure being left in situ.

Conclusion

8.14.36. 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.

8.15. Archaeology, Architectural and Cultural Heritage

8.15.1. Archaeology, Architectural and Cultural Heritage are addressed in Chapter 14 of the EIAR.

8.15.2. A desktop study was undertaken within a 1km radius of the main wind farm site. There is one recorded archaeological site located within the redline boundary of the site and this comprises a levelled fulacht fia (COO7-175) located within a forestry plantation. However it is not located within the footprint of any proposed construction area within the site. There are no National Monuments in state care located within the site or its close environs. The nearest example is Liscarroll Castle (CO016- 015001-/National Monument Ref. no. 333) which is located c.7km to the southwest. There are 23 recorded archaeological sites located within 1km of the locations of proposed construction areas within the site and these range in date from the late prehistoric to post-medieval periods. These are listed in Table 14.5 of the EIAR.

8.15.3. With regard to architectural heritage, the closest protected structure is Cooliney House (RPS 00020/NIAH 20900712), which is 860m northeast of the site compound location, is the only Protected Structure located within 1km of a proposed construction area, while Milltown Castle (RPS 00021/NIAH 20900708) is located c. 1.26km to the north of the main site entrance. A residential house in Ardglass townland, which is located c. 300m to the west of the northern site entrance and an outbuilding adjacent to Cooliney House are also included in the NIAH (refs 20900710 and 20900721). Annagh Bridge located to the south of the site is a recorded archaeological monument and is also listed in the NIAH (ref. 20900715). All of these architectural heritage structures have been assigned ‘Regional’ ratings by the NIAH.

8.15.4. Section 14.3.4.1 of the EIAR states that there are no recorded archaeological sites, designated architectural heritage structures or Architectural Conservation Areas directly located on the public road that will form the grid route connection to the substation in Rathnacally townland and which also forms the section of the turbine delivery route extending from the N20 road which is located c. 4.2km to the east.

8.15.5. The accessible recorded archaeological sites within the study area were visited. These included the Fulacht fia CO007-175----, Ringfort CO007-072001-, Enclosure CO007-072001-, Enclosure CO07-074----, Bridge CO007-144- ---, levelled Castle CO007-115----, Mound CO007-073---- and Redundant Record CO007-041. The EIAR states

that apart from the fulacht fia (CO007-175- ---) all inspected archaeological sites remain as described in the published inventory entries. It is stated that the location of fulacht fia (CO007-175----) was planted by woodland at some stage after it was recorded by the Archaeological Survey of Ireland and no surface traces of the site were identified during an inspection of its recorded location. It is noted that while ground disturbance arising during the creation and development of the woodland plantation may have removed surface traces of this site the potential that subsurface remains survive at its location cannot be discounted.

8.15.6. The EIAR states that there were no surface traces of potential unrecorded archaeological sites noted during systematic fieldwalking inspections of all accessible proposed construction areas, including turbines, hardstands, access roads, met mast, compound and substation, which were carried out in 2020 and 2021.

8.15.7. The section of the study area extends for 100m from both sides of the roadways that form the grid connection and turbine delivery route work areas. The EIAR states that six recorded archaeological sites, all located within private lands, were recorded. The EIAR notes that there are no designated architectural heritage buildings or Architectural Conservation Areas located within this section of the study area.

8.15.8. With regard to potential impacts, the 'do-nothing' scenario will see the continued preservation of recorded and potential cultural heritage features within the study areas. No significant direct or indirect impacts on the identified cultural heritage assets are predicted from the proposed wind farm development during construction or operation.

8.15.9. With regard to unrecorded sites and features, the EIAR notes that potential exists for the presence of subsurface archaeological sites, features or artefacts. While the level of any potential is indeterminable, the EIAR states that there is potential for permanent, direct, negative effects on any sites that may be present.

8.15.10. **Cumulative Impacts**

8.15.11. With regard to potential cumulative impacts, the EIAR considered the grid connection works, turbine delivery route and replant lands, as noted above. The EIAR considers potential cumulative impacts with respect to the proposed replanting lands in Emlagh, Co. Clare, Fiddane Solar Farm, Ballyloe Solar Farm, Boolard Wind Farm, Rathnacally Wind Farm and the M20 Cork to Limerick Scheme. The EIAR states that no significant adverse cumulative impacts are predicted.

8.15.12. **Mitigation Measures**

8.15.13. In order to mitigate the potential for impacts on unknown or unrecorded archaeology, an advance programme of archaeological site inspections is proposed within all development areas in order to assess whether there are any visible surface traces of any potential unrecorded archaeological or architectural heritage sites. It is also proposed that archaeological monitoring of ground excavation works during the construction phase will be carried out under license by the National Monument Service. If any sub-surface archaeological features are identified during these site investigations they will be recorded and cordoned off while the NMS are consulted to determine further appropriate mitigation measures, which may include preservation in situ or preservation by record. A similar approach to archaeological monitoring is proposed for the grid connection works and the turbine delivery route works. The locations of all recorded archaeological sites within the environs of construction areas will be cordoned off and the outer edges of their designated Zones of Notification will be clearly signed as 'No Entry: Archaeological Areas' for the duration of the construction phase.

8.15.14. **Residual Impacts**

8.15.15. Following mitigation, no significant residual effects are anticipated.

8.15.16. **Assessment**

8.15.17. Given the limited number of recorded cultural heritage features within and in the vicinity of the wind farm site and having regard to the proposed mitigation measures, I concur with the conclusions of the EIAR.

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

8.16. Landscape and Visual Impact

8.16.1. Landscape and Visual Impacts are addressed in Chapter 15 of the EIAR.

8.16.2. The EIAR generally considers landscape and visual impacts within a 20km radius study area, in accordance with the recommendations of the WEDG 2006 for blade tips greater than 100m. The exception to this is Lough Gur, which is located c. 26km northeast of the site. Given the importance of this archaeological 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.

8.16.3. The impact classification system is stated to be based on the IEMA Guidelines for Landscape and Visual Impact Assessment (2013). The impact significance matrix (see Table 15.3 of EIAR) ranges from 'Imperceptible' to 'Profound', with judgments of 'Substantial' and above considered to be 'significant impacts' in EIA terms.

8.16.4. The EIAR states that the wind farm site is situated in a lowland and gently undulating area, mostly keeping between 80m AOD and 150m AOD. The most apparent landform within the study area is that of the Ballyhoura Mountains, which runs east-west over a course of up to approx. 12km. The Ballyhoura foothills are 5-6km east of the site, with their rounded-profile summits cresting 7-8km distance from the site. The range peak at Seefin Mountain, at 528m AOD, is approx. 9km east of the site. In the western fringes of the study area are the foothills of the Mullaghareirk Mountains, which remain mostly less than 300m AOD (within the study area). In the far north, there is Knockfeerina (286m AOD) and Corronoher (273m AOD) hills. Approx. 9-10km west of the site, land lifts over 200m before soon tapering down to 100-150m AOD. However, these elevations are not reflective of the gentle, lowland landform that dominates the area. Within the central study area, land also tends to be undulating but of a broadly gentle, non-dramatic profile, ranging between 80m-170m AOD.

8.16.5. Within the site, terrain varies from below 90m AOD in its most southern corner, to over 130m AOD in its north-western corner. However, these represent two extremes of the site (i.e. aligning public roads to the north and south) that do not reflect the centre of where the proposed turbines are to be located. It is stated that in the centre of site, terrain chiefly undulates between 95m-100m AOD and in its western half can take the

form of a damp and/or water-clogged ‘sump’ in terrain, between marginally higher ground to the north and south.

8.16.6. The EIAR notes that there are multiple rivers and streams across the study area. The Blackwater runs west-east in the very south of the study area, with multiple tributaries to the north. In the central study area, the Awbeg River is most apparent, which tends to meander north-south, loosely mirroring the N20, in the direction of Buttevant, where it soon heads eastwards. In the west of the central study area is the River Deel, with Shruhaneballiv Stream in the north, near Charleville. Within the site, there are a number of small, canalised streams that are frequently found in less well-drained and/or boggy terrains, which eventually feed into the Awbeg River.

8.16.7. The EIAR states that the vast majority of land use is agricultural farmland and being in the Golden Vale, pasture is prevalent in comparison to tillage. Fields tend to medium-sized, with smaller fields over approx. 250m-200m and larger fields on the flatter basins. However, pockets of commercial forestry can also be found scattered through the study area. It is noted however that the southern slopes of the Ballyhouras are largely afforested with conifers, while the northern side is under extensive heathland and blanket bog.

8.16.8. A relatively modest rural population exists across most sections of the study area. Towns such as Mallow, Buttevant, Doneraile, Kanturk, Liscarroll, Charleville, Kilmallock and Bruree account for the most notable areas of urban land cover, whilst other anthropogenic landscape features include the linear transport corridors of the N20, N73 and the Dublin-Cork Intercity rail line. Several active and former quarries are also located throughout the wider study area.

8.16.9. In terms of the site, the EIAR states that the site consists of forest plantations as well as marginal pasture and boggy, weed- and rush-infested land, with numerous farm tracks and a dilapidated farmhouse and farmyard also present.

8.16.10. The EIAR notes that the proposed development and the central study area is situated in the Landscape Character Type LCT5 “Fertile Plain Moorland Ridge” as classified in the Draft Cork Landscape Strategy 2007. LCTS is classified as having a ‘Very High’ landscape sensitivity; a ‘Very High’ Landscape Value; and a ‘County’ Landscape Importance. LCT5 contains three landscape character areas. The site is located within Landscape Character Area 69:

"*Dromina/Charleville (Fertile Planar and Gently Undulating Mosaic farmland and Moorland Ridge). While lands remain predominately fertile, there is more evidence of scrub on the plain than the Golden Vale. The main settlement is Charleville and the scattered villages in the vicinity, gravitate towards it*."

8.16.11. There are two scenic routes within 14km of the site: (i) S13 "Kilfinnan-Shanballymore Road," located more than 14km, at its nearest point, east/southeast of the site; and (ii) S14 "Road between Mallow and Roskeen Bridge," located approx. 18km, at its nearest point, south of the site. The EIAR states that the site is not in or near a 'High Value Landscape' (HVL). The nearest HVL is located more than 3km east of the site.

8.16.12. The EIAR highlights that much of northern half of the study area falls within County Limerick, which comes within 6-6.5km northeast of the site. There are two designated scenic routes within 13km east of the site: (i) Castleoliver Scenic Drive and (ii) Kilfinane Scenic Drive.

8.16.13. The EIAR states that the site is located within an area designated as being "Open to Consideration" for wind energy development in the former Development Plan. As outlined in Section 5.0 above, the site is situated within an area designated as being "Open to Consideration" for wind energy development in the current Development Plan.

8.16.14. A Zone of Theoretical Visibility (ZTV) map for the 20km study area is included in Figure 15.12 of the EIAR, based on bare ground terrain data. The ZTV map utilises colour coding to identify areas where different numbers of turbines will be visible, and it indicates that the most notable areas of comprehensive visibility occur in the immediate surrounds of the site and in the wider northern and western half of the study area. The Ballyhoura Mountains restrict views of the proposal in the eastern study area. Where theoretical visibility of the proposed development does exist, in the overwhelming majority of instances it pertains to 5-6 turbines potentially visible. The EIAR highlights that the most dense and regular areas where theoretical visibility of 5-6 turbines exists. In respect to the aforementioned designated scenic routes in Cork and Limerick, the EIAR states that they have potential to experience views of the proposed development. It is noted that the Ballyhoura Way (2.5km) from the site is mostly within the ZTV.

8.16.15. 19 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 15.13 of the EIAR, while Tables 15.5 and 15.6 collectively 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.

8.16.16. With regard to mitigation measures, given the highly visible nature of wind energy developments, it is contended that it is not feasible to screen them from view using on-site measures. Instead, the two main forms of landscape and visual mitigation employed were mitigation by avoidance and design (through layout iteration and use of reverse-ZTV maps) and the use of buffers around residential receptors.

8.16.17. The EIAR states that the construction phase will have a temporary/short-term impact on the landscape, but it is not considered significant. It is contended that the scale of the proposed development will be well assimilated within its landscape context without undue conflicts of scale with underlying landform and land use patterns. This is largely due to the presence of the Boolard Wind Farm and Rathnacally Wind Farm. For these reasons the residual magnitude of the landscape impact is deemed to be Medium-low within the Central Study Area. Beyond 5km from the site, the residual magnitude of landscape impact is deemed to reduce to Low and Negligible at increasing distances as the wind farm becomes a proportionately smaller component of the overall landscape fabric.

8.16.18. With regard to the significance of potential landscape impacts, the EIAR contends that this is Moderate-slight within the central study area, while in the wider study area (i.e. beyond 5km from the site), the significance of landscape impact is not considered to exceed Slight, reducing to Imperceptible at increasing distances as the project becomes a progressively smaller component of the wider landscape fabric.

8.16.19. With regard to visual impacts, the sensitivity of the identified receptors varied from Medium-low to High-medium. A total of 14 of the 19 views are deemed to have low range significance judgements (Slight /Slight-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 5 views, three are rated as Moderate and two Moderate-slight. The EIAR states that overall, whilst the turbines appear as tall and prominent features in some of these views, they do not present with any notable sense of overbearing, nor will they appear out of place in this broad upland context where wind energy development is already a well-established land use. It is not considered that significant visual impacts will occur in respect of local community views, centres of population, major route receptors or heritage and amenity receptors.

8.16.20. **Cumulative Impacts**

8.16.21. With regard to cumulative landscape and visual impacts, the EIAR notes 7 No. operational wind farms and no permitted or proposed wind farms within the study area. These are listed in Table 15.8 of the EIAR. In terms of the non wind energy developments (neighbouring solar farms and the M20 Limerick to Cork project), the EIAR contends that as these developments are very different in nature, context, scale and location to that of this proposed wind energy development, and that cumulative effects are not deemed to be significant. 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 15.9 of EIAR). Overall, the EIAR contends that the proposed development will contribute an additional cumulative effect that is in the order of Medium-Low.

8.16.22. **Assessment**

8.16.23. The landscape and visual impacts of the proposed development were raised in a number of observations submitted to the Local Authority.

8.16.24. As outlined above, the EIAR includes 19 No. VRPs. I consider this to be a suitably comprehensive range of viewpoints, having regard to the characteristics and visual sensitivities of the area and the various scenic views and scenic routes potentially affected. Having inspected the application site and surrounding area, I also consider the selection of the viewpoint locations to be reasonable and suitably representative of key receptors/viewpoints. It is clear that the height and scale of the proposed wind turbines is such that they undoubtedly have the potential to impact on the visual amenities and character of the area. Furthermore, due to their scale, these impacts

cannot be effectively mitigated (such as by screening vegetation). The careful locating, design and layout of the turbines is therefore the only effective means of reducing the impacts. With regard to visual impacts on residential dwellings in the area, I note that the minimum separation distance from any turbine is stated to be 690m which I consider to be adequate to protect residential amenity from any significant visual impact (for example see VP1, VP2 and VP6).

8.16.25. The site is situated in a lowland and gently undulating area, with the Ballyhoura Mountains being the most apparent landform in the wider area. The site is located within the Draft Cork Landscape Strategy's (2007), the Landscape Character Type LCT5 "Fertile Plain Moorland Ridge" and is situated within an area designated as being "Open to Consideration" for wind energy development in the current Development Plan. 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 Moderate-slight landscape sensitivity.

8.16.26. The presence of the existing Boolard Wind Farm and Rathnacally Wind Farm are a key characteristic in the receiving landscape and it is notable from a number of the photomontages that the proposed wind farm generally 'reads' to the observer as an extension or continuation of the existing wind farms (see VP 1 and VP11), notwithstanding that the existing turbines (150.5m) are smaller than those proposed (175m). I note from my site visit that the existing wind farms form an important anchoring feature in the landscape and are representative of emerging trends in rural areas throughout the Country that are being developed for renewable energy purposes. For example, VP3 which is taken from an elevated position along the Ballyhoura Wall at Ballyhoura Hills, illustrates the important baseline characteristic the existing turbines have in the wider landscape. 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 Applicant that the proposed development would not have a significant landscape impact within the 5km study area, reducing beyond this as it becomes a smaller element of what is a complex and varied landscape. I therefore consider that the proposed development would not have an unacceptable impact on the receiving landscape.

8.16.27. The Local Authority raised concerns during its assessment in relation to the cumulative visual impact of the proposed wind farm and permitted solar farms in the site and the

industrialisation of the area's character. I concur with the EIAR that the cumulative effect of the proposed development and the permitted solar farms would not be so significant to adversely impact on the landscape. This is largely due to the low level of the ground mounted panels associated with a solar farms, the low lying topography in the area, the natural visual screens provided from hedgerows and field boundaries, and the setback distances of the solar farms and subject development from public roads and residential properties. I consider that the solar farm interconnector (CCC Reg. Ref. 225933) and substation (ABP Ref. 314431) would have a relevantly minor impact on the landscape character due to the nature and scale of these developments. As such, I do not consider that photomontages of these developments in combination with the proposed development are warranted for the Board to determine the case. As the site area for the subject development partially overlaps with the Fiddane, Cooliney, Coolcaum, Ballynoran, Ballynadrideen, Ardnageehy, Charleville Solar Farm (CCC Ref. 236099), I understand these two projects to be mutually exclusive and as such no in-combination impacts could result. I note that the EIAR has not considered that landscape and visual impact of Coolcum Solar Farm. However, in my view, that solar farm will largely read as an extension of the Ballyroe Solar Farm and will not result in adverse cumulative impacts when viewed in conjunction with the proposed development due to the nature and scale of the solar projects. (I highlight that the current proposed solar projects before the Local Authority and substation before the Board, will be subject to their own landscape and visual assessments prior to determination.)

8.16.28. Notwithstanding this, I do consider that the proposal in combination with the other permitted and proposed energy projects in the vicinity would inevitably further diversify the area's rural agricultural character should they all commence operation. The proposal will involve a notable intensification of built development within the central study area. The 35-year lifespan of the development although long term, is not permanent. When decommissioned, the site will be reinstated with the exception of turbine foundations and access tracks. The substation may remain beyond the 35-year lifespan of the wind farm as part of the national grid system. The scale of the proposed development during the operational phase will be assimilated within its landscape context without undue conflicts of scale with the underlying landform and

the land use patterns in the area. As stated above, the highest potential for cumulative impacts arises from the more elevated areas to the east of the study area.

8.16.29. In summary, in my opinion, the landscape has the capacity to absorb the proposed development in addition to the permitted neighbouring proposals.

8.16.30. **Conclusion**

8.16.31. 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.

8.17. Material Assets

8.17.1. Material Assets is addressed in Chapter 11[8] of the EIAR while telecommunications and aviation are considered in Chapter 16.

8.17.2. The main material assets identified in the EIAR as being subject to potential environmental impacts are: land use; recreation, amenity and tourism; and renewable, non-renewable resources and utility infrastructure.

8.17.3. With regard to land use, the site is in agricultural use with areas of commercial broadleaf forestry throughout. The wider area is primarily in agricultural use, with further areas of commercial forestry and linear residential settlement along the local road network. There are two wind farms in proximity to the site (Boolard WF and Rathnacally WF). There is a quarry 2.5km from the site. In addition, there is a fertilizer storage facility, a meat processing facility (Dawn Meats), and an Aldi storage facility to the east of the site along the L1322.

8.17.4. During the construction phase, the existing surrounding land uses are expected to remain unchanged. There will be temporary disruption to parts of the agricultural land (comprising pasture lands and lands with significant areas of natural vegetation) and forestry area within the site during the construction phase. However, these lands will be disrupted in the long-term where the turbines and associated infrastructure are

[8] Chapter 11 also addresses Population and Human Health, which I have addressed separately at Section 8.8.

proposed. Four of the turbines and their associated hardstandings are located with the forestry area/partly forestry area, while the balance is on agricultural land. Approx. 0.38km of existing agricultural access tracks will be upgraded and utilised during the construction phase. A further approx. 4.57km of new tracks will be required in both the forestry areas and agricultural lands. In total, 12.6ha of broadleaf forestry will be felled during the construction period, which is stated to have a long-term moderate negative impact to forestry. Forestry replant lands have been identified in Emlagh, Co. Clare, which will be a requirement of the felling licence.

8.17.5. The EIAR also assesses potential land use impacts associated with the grid connection and turbine delivery route works, which do not form part of the proposed development before the Board. No significant impacts are anticipated.

8.17.6. In the operational phase it is anticipated that there will be no significant impact on existing land uses, or agricultural activities, given that the footprint of the proposed development will occupy a small proportion of the development site area.

8.17.7. No activity is expected at the associated grid connection and turbine delivery route during the operational phase, except where repair works may be required. No significant impact on land use is expected in this scenario.

8.17.8. Mitigation measures for land use are primarily related to preliminary design stage and the re-use of existing forestry tracks in order to minimise the construction of new tracks and roads and minimise the removal of forested areas. Construction will also be undertaken in accordance with the CEMP to avoid undue impact to adjacent land uses.

8.17.9. No significant adverse negative residual effects arising from the project on land use are anticipated during construction, operation or decommissioning phases.

8.17.10. With regard to recreation, amenity and tourism, the EIAR sets out the amenities in the area, such as Ballyhoura Way, a number of GAA clubs, castles and trails. It is stated that the most significant recreation activity/attractions in proximity to the site is trail walking, mountain biking, equestrian activity and sports grounds. There are no expected significant, adverse impacts to recreation, amenity and tourism in the surrounding area during the construction phase. Furthermore, in terms of the operational phase, it is expected that the proposed development will have a non-significant neutral impact on recreation and tourism in area due to the distance of the

proposed turbines from significant features. As such, no mitigation is proposed. There are no expected significant, adverse residual impacts.

8.17.11. With regard to renewable, non-renewable resources and utility infrastructure, it is stated that the use of non-renewable resources such as aggregates and cement during construction will be an imperceptible impact in the long-term, with re-use of existing field and forestry tracks. It is stated that the proposed development will result in a positive residual impact on non-renewable resources by offsetting the use of fossil fuels in electricity generation over the lifetime of the project. The impact on broadleaf renewable timber resources within the study area as a result of felling is considered long-term, slight and negative. However, at a national scale, the effect is considered to be neutral having regard to the replant lands in Emlagh, Co. Clare. The taking-in-charge of the on-site substation and grid connection by ESB will result in a slight positive residual impact on electricity infrastructure in the area. It is stated that there will be no interaction between the wind farm site and the consented adjacent Fiddane/Charleville Solar Farm site. It is stated that both grid routes for these projects can be accommodated in the public road. Due to the location of the proposed turbines positioned to the south of the consented solar farm, there is potential for loss of sunlight due to overshadowing. However, T02 was relocated approx. 110m to the south of its original locations in order to reduce shadowing effects on the solar array. This mitigation measure also results in a reduction of tree felling required by c1.9ha. It is stated that production analysis and shadowing assessment demonstrated that the proposed wind farm will result in losses of 0.29% of total gross annual electricity production of the solar farm, and as such it is considered to have a non-significant impact. Residual waste from the construction and decommissioning phases will be disposed of in a licenced waste facility with a slight impact on the capacity of licenced waste facilities in the area. In the operational phase, no waste will be produced.

8.17.12. The issues of telecommunications and aviation are considered in Chapter 16 of the EIAR. During the construction phase, the EIAR identifies potential requirements for localised services interruptions during the turbine delivery stage, due to the need to disconnect or relocate overhead cables to accommodate the oversized loads. Any such impacts will be short-term, temporary and not significant. In the operational phase, having engaged in consultation with service providers, the EIAR states that no significant impacts on telecommunications and broadcasting are anticipated. I

highlight that NovaTel advised the Applicant that the proposal could result in a 35% loss in coverage. However following an EMI Impact Assessment Study (Appendix 16.2 of the EIAR), an agreement between the Applicant and NovaTel was established for the Applicant to cover the cost of installing a relay base station transmitted upgrade at a telecommunications mase site in Ballyhoura to improve service coverage in the vicinity of the proposed development.

8.17.13. With regard to aviation, the closest airport is Shannon Airport (43km north west of the site). Rathcoole Aerdrome is located 29km south west of the site. The EIAR notes this separation distance and the presence of existing wind turbines in the area and considers that no significant impacts are likely to arise during construction, operation or decommissioning phases.

8.17.14. No significant cumulative impacts with other existing or proposed projects on material assets are anticipated.

8.17.15. **Assessment**

8.17.16. Recreation, Amenity and Tourism

8.17.17. The EIAR notes that both the WEDG 2006 and the Draft WEDG 2019 state that tourism and wind energy can co-exist happily, with reference to SEAI research that found a positive disposition towards wind farms. Failte Ireland research is also referenced, which found that 71% of respondents claimed that potentially greater numbers of wind farms would either have no impact on their likelihood to visit or have a positive impact on future visits to the island of Ireland. Similar survey results from Scotland are also provided in the EIAR.

8.17.18. I note the presence of the existing Boolard Wind Farm and Rathnacally Wind Farm in the area. There is no evidence before the Board that the operation of these wind farms has had a significant adverse impact on tourism or the agri-tourism economy in the area. I have addressed the potential landscape and visual impacts of the proposed development elsewhere, but with specific regard to tourism and recreation, I consider that the proposed development would generally have an imperceptible impact.

8.17.19. Telecommunications and Aviation

8.17.20. With regard to telecommunications and aviation, it is clear that the Applicant has attempted to engage in consultation with the various telecommunications service

operators, and with the exception of NovaTel, none of the consultation responses identified any likely impacts arising from the proposed development. As outlined above, NovaTel has agreed for the wind farm developer to fund the costs of installing a relay base station transmitted upgrade at a telecommunications mast site in Ballyhoura to improve service coverage in the vicinity of the proposed development. Having regard to the EIAR's findings and an absence of any information contradicting these findings, I consider it unlikely that the proposed development would result in any significant electromagnetic or other interference with telecommunications infrastructure and services.

8.17.21. With regard to aviation, I concur with the findings of the EIAR that having regard to the distance of the proposed development to existing airports, I do not consider that the proposed development would adversely impact on their operation.

8.17.22. Other Material Assets

8.17.23. I concur with the applicant's conclusion that no significant adverse impacts on material assets are likely, although there will be a positive residual impact on electricity supply as a result of the operation of the proposed development. Given the scale and nature of the proposed development, no significant cumulative impacts on material assets are likely to occur.

8.17.24. **Conclusion**

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

8.18. The Interaction between the Above Factors

8.18.1. The interactions between the above factors is addressed in Chapter 17 of the EIAR. Generally, the interactions relate to construction phase effects, although some operational phase interactions are identified, including a number of positive effects, such as air quality & climate and population and human health. The interactions

between the factors are graphically tabulated in Table 17-1. No significant residual impacts associated with the interactions of environmental factors are identified.

8.18.2. Having regard to the nature of the proposed development, the receiving environment and the foregoing chapters of the EIAR, I am satisfied that the summary of the potential for interactions between environmental factors is reasonable.

8.19. **Reasoned Conclusion**

8.19.1. Having regard to the examination of environmental information contained above, to the EIAR and supplementary information provided by the Applicant and the submissions received, the contents of which I have noted, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows:

- **Biodiversity:** Potential significant effects on habitats, mammals, bats, birds, except Whooper Swan, and aquatic ecology in the construction phase and bats in the operational phase which would be mitigated by the implementation of the mitigation measures contained in the Environmental Impact Assessment Report, including the Construction Environmental Management Plan, good practice construction measures, timing of vegetation removal, water pollution prevention measures, provision of bat boxes, use of buffer zones, biosecurity measures and the appointment of an Ecological Clerk of Works and Environmental Manager. Further pre-commencement biodiversity surveys are also proposed.

  However, the proposed development could potentially result in significant residual impacts on the local Awbeg floodplain (Churchtown area) Whooper Swan. There is significant uncertainty as to the likely effectiveness of the proposed mitigation measures proposed to address the collision impacts of the development on Whooper Swan. Furthermore, should the proposed development be constructed in the same wintering period as the Ballyroe Solar Farm (and other neighbouring renewable energy project in the vicinity of the site), it may result in further disturbance/dispersal impacts on the local herd. It is considered that the proposed development is inconsistent with Objective BE 15-2 of the Cork County Development Plan 2022-2028. (See Section 9.0 below.)

- **Population and Human Health**: There will be a positive impact on the socio-economic profile of the area due to community funding; 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. Noise, vibration and shadow flicker during the construction and/or the operational phases would be avoided by the implementation of the mitigation measures.

- **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.
- **Material Assets, Cultural Heritage and the Landscape**: 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 commercial forestry, agricultural uses, the existing Rathnacally Wind Farm and Boolard Wind Farm and the nature and characteristics of the area.

9.0 Appropriate Assessment

9.1. Introduction

9.1.1. The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, sections 177U and 177V of the Planning and Development Act 2000,

as amended), are considered fully in this section. The areas addressed in this section are as follows:

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

• Brief Description of the Development

• Submissions Received

• The Natura Impact Statement

• Screening the need for Appropriate Assessment

• Appropriate Assessment

• Recommendation.

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

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

9.2.2. The proposed development is not directly connected to or necessary to the management of any European site and therefore is subject to the provisions of Article 6(3).

9.3. Brief Description of the Development

The Applicant provides a description of the proposed development at Section 2 Report to Inform Appropriate Assessment Process (Screening and natura Impact Statement)' Screening Report and Natura Impact Statement' (Fehily Timoney, November 2021) submitted with the application. In summary, the development comprises:

- Erection of 6 no. wind turbines with a blade tip height of 175m, rotor diameter of 150m and a hub height of 100m;
- Construction of turbine foundations and crane pad hardstanding areas;

- Construction of new site tracks and associated drainage infrastructure;
- Upgrading of existing tracks and associated drainage infrastructure where necessary;
- Upgrade of existing entrance onto Local Road L1322;
- All associated drainage and sediment control including the installation of new watercourse or drain crossings and the re-use or upgrading of existing internal watercourse and drain crossings;
- Construction of 1 no. permanent onsite 38kV electrical substation to ESBN specifications including:

  - Control Building with welfare facilities;

  - Electrical infrastructure;

  - Parking;

  - Wastewater holding tank; Rainwater harvesting;

  - Security fencing;

  - All associated infrastructure, services and site works
- Temporary accommodation works associated with the Turbine Delivery Route to facilitate the delivery of turbine components;
- 1 no. Temporary construction site compound and associated ancillary infrastructure including parking;
- Tree felling to facilitate construction and operation of the proposed development;
- Installation of underground medium voltage (20/33kV) and communication cabling between the proposed turbines and the proposed on-site substation and associated ancillary works;
- Erection of 1 no. permanent meteorological mast with a height of 100m above ground level and associated access track;
- Installation of medium voltage (up to 38kV) underground cabling between the proposed on-site substation and the existing Charleville substation and

associated ancillary works. The proposed grid connection cable works will include 2 no. watercourse crossings and the installation of 9 no. pre-cast joint bays;

- All associated site development works;
- A 10 year planning permission and 35 year operational life from the date of commissioning of the entire wind farm.

9.4. **Submissions Received**

9.4.1. The DAU submission in respect of the wind farm proposal raised a number of points including: concerns relating potential for reduced water quality in the Awbeg River which forms part of the Blackwater River (Cork/Waterford) cSAC as a result of the proposal and in combination with other projects in the area; instream works may impact white-clawed crayfish in the Awbeg River; no rationale provided as to why certain mitigation measures are proposed; and no dawn or dusk survey of Whooper Swan (Annex I species) submitted with EIAR. In response to the Applicant's RFI Response, the DAU stated that there was a low risk from dispersal collision with turbines for Whooper Swan, but that the use of untested mitigation technology and post decision monitoring called into question the completeness of the Appropriate Assessment and that the NPWS would have difficulty with such agreements.

9.4.2. Similarly, the IFI noted that the proposed development lies within the upper catchment of the Awbeg River which is a major tributary of the Munster Blackwater cSAC. It makes a number of recommendations in relation to water protection.

9.4.3. Third-Party Observations submitted to the Local Authority in respect to the proposed development note the avifauna associated with areas of special conservation, including Whooper Swan.

9.5. **The Natura Impact Statement**

9.5.1. The application included a 'Report to Inform Appropriate Assessment Process (Screening and natura Impact Statement)' Screening Report and Natura Impact Statement' (Fehily Timoney, November 2021). Sections 1 and 2 of the document comprise an introduction, methodology, and description of the project. Section 3 comprises 'Stage One – Screening' report and Section 4 comprises 'Stage Two – Natura Impact Statement'.

9.5.2. The Board should note that, like the EIAR, the AA Screening Report and NIS relate to the overall project, i.e. the proposed wind farm development including the grid connection that is the subject of this appeal as well as the turbine delivery route works and the replant lands that do not form part of the development for which permission is being sought. Appendix 1 provides an Appropriate Assessment Screening Report and Natura Impact Statement in respect of the replant lands in Clare.

Section 3 of the report comprises an AA Screening Report, which concludes that significant adverse impacts to the Blackwater River (Cork/Waterford) cSAC (002170), Kilcolman Bog SPA (004095), Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161); River Shannon and River Fergus Estuaries SPA (004077); and Lower River Shannon SAC (002165) cannot be ruled out and that it is necessary to proceed to a Stage 2 Appropriate Assessment[9].

9.5.3. The substantive NIS, contained in Section 4 of the report, outlines the methodology used for assessing potential impacts on the habitats and species within these European Site that have the potential to be affected by the proposed development. It predicts the potential impacts for these sites and their conservation objectives, it suggests mitigation measures, assesses in-combination effects with other plans and projects and it identifies any residual effects on the European sites and their conservation objectives.

9.5.4. The assessment was conducted in accordance with the following guidance:

- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2002). This document was updated by Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Commission Notice (2021) Brussels, 28.9.2021 C(2021) 6913 final;

[9] Section 3.4 screens out River Shannon and River Fergus Estuaries SPA (004077); and Lower River Shannon SAC (002165); however these two sites are screened in and form part of the Stage 2 assessment. As such, I consider the screening out of these to sites in this Section of the Report to be a typographical error.

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin (2009, updated 2010);
- Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission (2018). Brussels, 21.11.2018 C (2018) 7621 final;
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission 2013;
- OPR Practice Note PN01 Appropriate Assessment Screening for Development Management Office of the Planning Regulator (March 2021).

9.5.5. The NIS makes no reference to any consultation having taken place in the preparation of the Report. (I note that the Applicant's response to the Local Authority's RFI (Item 3.3) states that IFI was consulted as part of the scoping for the EIAR. No response was received in this regard.)

9.5.6. The Applicant's response to the Local Authority's RFI addresses a number of issues in relation to Appropriate Assessment, however there was only one significant amendment made to the NIS as part of the Response; the inclusion of a curtailment strategy to mitigate the possibility of Whooper Swan strikes at night during the migration season.

9.5.7. Having reviewed the NIS and the supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, clearly identifies the potential effects, and uses best scientific information and knowledge. Details of mitigation measures are provided, and they are summarised in Section 4.4 of the NIS. I am satisfied that the information is sufficient to allow for appropriate assessment of the proposed development. Set out below is my own independent assessment.

9.6. **Screening the Need for Appropriate Assessment**

9.6.1. The proposed development is not directly connected to or necessary to the management of any European Site and therefore is subject to the provisions of Article 6(3).

9.6.2. The screening firstly considers European Sites within 15km of the proposed development. Then a source-pathway-receptor model was applied to determine

European sites which may potentially be significantly affected having regard to the pathway for impact and the sensitivity of the conservation interests to the effect of the impact. I consider this approach acceptable.

9.6.3. There are 7 No. Special Areas of Conservation and 5 No. Special Protection Areas considered in the screening due to potential links to the overall project.

9.7. Table 9.1 below lists the qualifying interests of the 9 No. European Sites, their conservation objectives and identifies possible connections between the proposed development (source) and the sites (receptors).

9.8. Having regard to: the information and submissions available; the nature, size and location of the proposed development; its likely direct, indirect and cumulative effects; the source-pathway-receptor model; and the sensitivities of the ecological receptors, I consider that the 9 No. identified sites are relevant to include for the purposes of initial screening for the requirement for Stage 2 appropriate assessment on the basis of likely significant effects.

Table 9.1: Table of European Sites Within a Possible Zone of Influence of the Proposed Development					
European Site (Code)	**Minimum Distance (km)**	**Qualifying Interest(s)**	**Conservation Objectives**	**Connections (Source-Pathway-Receptor)**	**Considered further in screening**
Blackwater River (Cork/Waterford) cSAC [002170]	0.65km to closest turbine 1.5km in-stream to node 10.5 on TRD route	• 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]	To maintain or restore the favourable conservation condition of the qualifying interests	Yes There is hydrological connectivity between the proposed windfarm site, grid connection route, TDR and the Blackwater River (Cork/Waterford) cSAC.	Yes Hydrological connection to cSAC from the proposed windfarm site, grid connection route, TDR could give rise to water quality impacts during construction phase. Construction works could impact on qualifying habitats or species through sedimentation, contamination, disturbance or the spread of invasive species.

		• Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Lampetra fluviatilis (River Lamprey) [1099] • Alosa fallax fallax (Twaite Shad) [1103] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Trichomanes speciosum (Killarney Fern) [1421]			
Ballyhoura Mountains SAC (002036)	8.2km to closest turbine	• Northern Atlantic wet heaths with Erica tetralix [4010] • European dry heaths [4030] • Blanket bogs (* if active bog) [7130]	To restore the favourable conservation condition of the qualifying interests	No Due to distance and lack of hydrological connections or pathways to the habitat for which this site is designated.	No There is no potential for connectivity due to distance and absence of viable ecological vectors.
Kilcolman Bog SPA (004095)	9.1km to closest turbine	• Whooper Swan (Cygnus cygnus) [A038] • Teal (Anas crecca) [A052] • Shoveler (Anas clypeata) [A056] • Wetland and Waterbirds [A999]	To maintain or restore the favourable conservation condition of the qualifying interests	Yes Whooper Swan (Cygnus cygnus) listed as Special	Yes There is potential for disturbance and collision risk to Whooper Swan.

				Conservation Interests for this SPA winters within surrounding farmlands to the west and south of the subject site. Whooper Swan traverse the site during their migration period between February and mid-April. Wind farm site not within the core foraging range of Kilcolman Bog SPA for Teal or Shoveler. Neither species were identified during the flight activity surveys.	
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	17.8km to closest turbine	• Hen Harrier (Circus cyaneus) [A082]	To restore the favourable conservation condition of the qualifying interests.	Yes Hen Harrier recorded within and outside the site study area.	Yes There is potential for disturbance and collision risk to Hen Harrier.
River Shannon and River Fergus	1.8km (1.7 km instream) from	• Cormorant (Phalacrocorax carbo) [A017]	To maintain the favourable conservation	Yes	Yes Hydrological connection to SPA

Estuaries SPA (004077)	Replant Lands	• Whooper Swan (Cygnus cygnus) [A038] • Light-bellied Brent Goose (Branta bernicla hrota) [A046] • Shelduck (Tadorna tadorna) [A048] • Wigeon (Anas penelope) [A050] • Teal (Anas crecca) [A052] • Pintail (Anas acuta) [A054] • Shoveler (Anas clypeata) [A056] • Scaup (Aythya marila) [A062] • Ringed Plover (Charadrius hiaticula) [A137] • Golden Plover (Pluvialis apricaria) [A140] • Grey Plover (Pluvialis squatarola) [A141] • Lapwing (Vanellus vanellus) [A142] • Knot (Calidris canutus) [A143]	condition of the qualifying interests.	Indirect hydrological links with proposed development.	and SAC could give rise to changes in water quality during construction phase.

Lower River Shannon SAC (002165)		• Dunlin (Calidris alpina) [A149] • Black-tailed Godwit (Limosa limosa) [A156] • Bar-tailed Godwit (Limosa lapponica) [A157] • Curlew (Numenius arquata) [A160] • Redshank (Tringa totanus) [A162] • Greenshank (Tringa nebularia) [A164] • Black-headed Gull (Chroicocephalus ridibundus) [A179] • Wetland and Waterbirds [A999] ○ 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]	To maintain or restore the favourable conservation condition of the qualifying interests.		

		○ 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 maritimae) [1330] ○ 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]			
Tullaher Lough and Bog SAC (002343)	1.3km from Replant Lands	• Active raised bogs [7110] • Degraded raised bogs still capable of natural regeneration [7120] • Transition mires and quaking bogs [7140] • Depressions on peat substrates of the Rhynchosporion [7150]	To maintain or restore the favourable conservation condition of the qualifying interests.	No No connection.	No Due to lack of pathway.

Kilkee Reefs SAC (002264)	5.1km from Replant Lands	• Large shallow inlets and bays [1160] • Reefs [1170] • Submerged or partially submerged sea caves [8330]	To maintain the favourable conservation condition of the qualifying interests.	No No connection.	No Due to lack of pathway.
Mid-Clare Coast SPA (004182)	6.2km from Replant Lands	• Cormorant (Phalacrocorax carbo) [A017] • Barnacle Goose (Branta leucopsis) [A045] • Ringed Plover (Charadrius hiaticula) [A137] • Sanderling (Calidris alba) [A144] • Purple Sandpiper (Calidris maritima) [A148] • Dunlin (Calidris alpina) [A149] • Turnstone (Arenaria interpres) [A169] • Wetland and Waterbirds [A999]	To maintain the favourable conservation condition of the qualifying interests.	No Excluded as replant lands are no suitable to SCI species.	No The distance from the site, including the hydrological distance, and that the site is of low value for these species, the potential for significant effects have been excluded.
Carrowmore Dunes SAC (002250)	6.3km from Replant Lands	• Reefs [1170] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	To maintain/restore the favourable conservation condition of the qualifying interests.	No No connection.	No Due to lack of pathway.

		• Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]			
Carrowmore Point to Spanish Point and Islands SAC (001021)	10.2km from Replant Lands	• Coastal lagoons [1150] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Petrifying springs with tufa formation (Cratoneurion) [7220]	To maintain/restore the favourable conservation condition of the qualifying interests.	No No connection.	No Due to lack of pathway.
Illaunonearaun SPA (004114)	11.6km from Replant Lands	Barnacle Goose (Branta leucopsis) [A045]	To maintain/restore the favourable conservation condition of the qualifying interests.	No Excluded as replant lands are no suitable to SCI species.	No The distance from the site and that the site is of low value for these species, the potential for significant effects have been excluded.

9.8.1. **Screening Determination**

9.8.2. Based on my examination of the NIS and supporting information, the NPWS website, aerial and satellite imagery, the scale of the proposed development and likely effects, separation distance and functional relationship between the proposed works and the European Sites, their conservation objectives and taken in conjunction with my assessment of the subject site and the surrounding area, I conclude that a Stage 2 Appropriate Assessment is required for five European Sites: Blackwater River (Cork/Waterford) cSAC (002170); Kilcolman Bog SPA (004095); Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161); and River Shannon and River Fergus Estuaries SPA (004077) and Lower River Shannon SAC (002165).

9.8.3. The remaining sites (Ballyhoura Mountains SAC (002036); Tullaher Lough and Bog SAC (002343); Kilkee Reefs SAC (002264); Mid-Clare Coast SPA (004182); Carrowmore Dunes SAC (002550); Carrowmore Point to Spanish Point and Islands SAC (001021); Illaunonearaun SPA (004114)) can be screened out from further assessment because of the characteristics of the appeal site, the scale of the proposed development, the nature of the Conservation Objectives and Qualifying Interests, the separation distances, the results of baseline surveys and in particular the lack of a substantive linkage between the proposed development and the European sites.

9.8.4. Measures intended to reduce or avoid significant effects have not been specifically considered in the screening process.

9.9. **Appropriate Assessment of Implications of the Proposed Development**

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

9.9.2. Sites Subject to Appropriate Assessment

9.9.3. The following sites are subject to Appropriate Assessment:

- Blackwater River (Cork/Waterford) cSAC (002170);
- Kilcolman Bog SPA (004095);
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161);
- River Shannon and River Fergus Estuaries SPA (004077); and
- Lower River Shannon SAC (002165).

Each of the above European Sites' Conservation Objectives can be viewed on National Parks & Wildlife Service (npws.ie).

9.9.4. Qualifying Interests Potentially Present within Zone of Influence

9.9.5. Based on desktop research and the survey records, the Applicant has identified the qualifying interests from each of the above-mentioned European Sites that may be potentially impacted within the ZoI (see Table 9.2). Having reviewed the documentation on file, the Conservation Objectives supporting documents for the sites available through the NPWS website (www.npws.ie), and noting the nature, scale, design, and location of the proposed development, together with the nature of the qualifying interests which will not be in anyway affect having regard to the nature of the proposal, I am satisfied that potential adverse effects on the integrity of the qualifying interests of the subject European Sites that are not listed in Table 9.2 can be ruled out. This is largely due to their absence or very limited presence within the ZOI. I do not consider that there are any potential in-combination impacts from the proposed development and other plans and projects that would significantly impact on the excluded qualifying interests. My assessment has no reliance on mitigation measures in ruling out any potential impact on the qualifying interests not listed below. Accordingly, I concur with the Applicant that they do not require further assessment and can be screened out. Only those qualifying interests outlined in Table 9.2 require Stage 2 Appropriate Assessment.

Table 9.2: Qualifying Interests Potentially Present within Zone of Influence	
Sites subject to Appropriate Assessment	**Qualifying Interests Potentially Present within Zone of Influence**
Blackwater River (Cork/Waterford) SAC (002170)	• White-clawed crayfish • Lamprey (Brook Lamprey, Sea Lamprey, and River Lamprey) • Atlantic Salmon • Otter
Kilcolman Bog SPA (004095)	• Whooper Swan
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)	• Hen Harrier
Lower River Shannon SAC (002165)	• Brook Lamprey • Atlantic Salmon • Otter
River Shannon and River Fergus Estuaries SPA (004077)	• Lapwing

9.9.8. Aspects of the Proposed Development

9.9.9. In my opinion, having reviewed the development proposals and the characteristics of the European Sites, the main aspects of the proposed development that could adversely affect the abovementioned qualifying interests of the European Sites primarily arise during the construction phase include:

- Impacts to water quality through construction related pollution events (e.g. chemicals, oil/fuel, cementitious materials etc.) or nutrient/sediments/silt run-off.
- Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.
- Habitat loss, fragmentation or alteration.
- Introduction of invasive species or biosecurity issues during construction.

9.9.10. With regard to the operational phase, having regard to the nature of the proposed development, the qualifying interests and conservation objectives of the abovementioned European Sites, I consider the main aspects of the proposal that could adversely affect the conservation objectives of the abovementioned European Sites primarily to be:

- Collision risk, severance of habitats or impact on flightpaths;
- Disturbance of foraging areas; and
- Impacts to water quality due to hydrocarbon, oil or other pollutant run-off.

9.9.11. Tables 9.3 - 9.7 below summarise the Appropriate Assessment and site integrity test with respect to the aforementioned qualifying species. The conservation objectives for the European Sites have been examined and assessed with regard to the identified potential significant effects and all aspects of the project (alone and in combination with other plans and projects). Mitigation measures proposed to avoid and reduce impacts to a non-significant level have been assessed, and clear, precise and definitive conclusions reached in terms of adverse effects on the integrity of the European sites.

9.9.12. <u>In-Combination Effects</u>

9.9.13. With regard to other projects, the NIS examines a range of projects for potential in-combination effects and was informed by a planning search within a 2km buffer zone around the main wind farm site for residential developments, a 250m radius of the GCR and TDR; and a 20km radius of large and energy projects.

9.9.14. The listed projects below and were identified by the Applicant for potential in-combination effects:

Project	**In-combination Impacts**
Fiddane solar farm	The Fiddane solar farm grid cables will be installed in the bridge deck at the Rathnacally crossing point, while the proposed Annagh GCR will be routed under the stream bed. Therefore no potential for significant in-combination / cumulative effects with the proposed development.
N/M20 Cork to Limerick Road Improvement Scheme	If the construction of this project were to occur in the catchment of the Blackwater River (Cork/Waterford) SAC in parallel with the proposed project cumulative impacts could occur upon the SAC.
Silviculture and Agriculture	Cumulative effects could occur if felling and construction activities at the wind farm site are undertaken in parallel with off-site forestry activities (particularly harvesting) and agricultural activities (particularly manure spreading) within the same catchment, ultimately adding potential nutrients to the Blackwater River (Cork/Waterford) SAC and further impacting the aquatic qualifying interests.
Replant Lands - Forestry Applications	Two applications have been approved and three applications are pending. The total area to be afforested equates to 29.03 ha, with 10.46 ha recently planted, and 3.39 ha classed as clearfell and

	thinning. If the pending afforestation projects were to be carried out at the same time as the proposed project, it is possible that cumulative impacts of sedimentation could arise.
Cork County Development Plan 2014 and Draft Cork County Development Plan 2022-2028	Plan includes several policies for the protection of wildlife and European sites, encouraging the appropriate assessment of potential effects from future development. No potential for in-combination effects were determined.
Clare County Development Plan	Plan includes several policies for the protection of wildlife and European sites, encouraging the appropriate assessment of potential effects from future development. No potential for in-combination effects were determined.

9.9.15. In addition, to the projects and plans identified by the Applicant above, I consider the following project also to be relevant to this assessment (see Section 4.0 above for further detail):

- Existing: Boolard Wind Farm and Rathnacally Wind Farm
- Permitted, but not yet constructed: Solar Farm Interconnectors and Ballyroe Solar Farm
- Proposed: Coolcaum Solar Farm and Ballyhea Substation.

Tables 9.3 – 9.7: Summary of Appropriate Assessment of implications of the proposed development on the integrity of identified European Sites alone and in combination with other plans and projects in view of the sites' Conservation Objectives.

Table 9.3: Blackwater River (Cork/Waterford) SAC (002170)					
Summary of Key issues that could give rise to adverse effects: • **Impacts to water quality through construction related pollution events (e.g. chemicals, oil/fuel, cementitious materials etc.) or sediments/silt run-off.** • **Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.** • **Habitat loss, fragmentation or alteration.** • **Introduction of invasive species or biosecurity issues during construction.** • **In-combination effects with other projects.** **Conservation Objectives:** Blackwater River (Cork/Waterford) SAC | National Parks & Wildlife Service (npws.ie)					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Austropotamobius pallipes (White-clawed Crayfish) [1092]	Maintain	Yes The nearest crayfish record to the proposed wind farm with potential hydrological connectivity was at Annagh Bridge on the Awbeg River, located approx. 1.7km from the turbine T4 hardstand via the Ardglass River (c. 180m over-land and then c. 1.5km in-stream). White-clawed crayfish are considered present along the full length of the Awbeg River and so are assumed to be present in the aquatic receiving environment of the wind farm and GCR.	Yes Potential for proposed development to contribute to an in-combination effect on population density, juvenile density, deterioration in water quality or siltation of river beds.	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards such as crayfish plague. Ecological Clerk of	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

		Siltation or pollution could result in a potential negative effect on population density, juvenile density, on water quality and by contributing to siltation of river beds. Introduction of invasive species/biohazards such as crayfish plague could have a potential negative effect on population density, juvenile density, introduction of alien crayfish species outcompeting native species.		Works to be appointed to monitor compliance with mitigation measures and conditions.	
Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099]	Restore Maintain Maintain	Yes Widely distributed in the Awbeg River (east and west branches) (NPWS 2012 and NBDC). Surveys undertaken in 2020 recorded lamprey species within the Oakfront River, tributary of the Awbeg River (west). Siltation or pollution could result in a potential negative effect population structure and extent of spawning/juveniles habitats. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on distribution of species, population structure of juveniles, on spawning habitat and on juvenile habitat.	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Salmo salar (Salmon) [1106]	Maintain	Yes In general, salmonid habitat in the vicinity of the proposed Annagh wind	Yes Potential for proposed	See Section 9.11 below. Best practice drainage and	Yes No doubt as to the effectiveness

		farm was poor due to historical drainage pressures, low or intermittent/seasonal flows and often excessive siltation. The downstream-connecting Awbeg River is known to support a healthy population of both brown trout and Atlantic salmon, at least in the middle and lower reaches of the river. Siltation or pollution could result in a potential negative effect resulting in potential reduction in availability of spawning habitat, salmonfry abundance, smolt abundance and the reduction in number and distribution of redds on the Awbeg River. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	development to contribute to an in-combination effect on distribution of species, spawning habitat availability, on abundance of salmon fry, smolt and redds, and on water quality.	pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Lutra lutra (Otter) [1355]	Restore	Yes Otter signs (spraint) were recorded on the Awbeg River at Scart Bridge and the L1320 road bridge, as well as the Awbeg River (east branch) bridge at Caherconnor. An active otter holt was recorded near the Awbeg-Oakfront confluence during 2020 surveys. There is potential for the species to potentially be using the watercourses on and adjacent to the wind farm site.	Yes Potential for contributing to cumulative increase in works taking place, a reduction in terrestrial and freshwater habitat, a cumulative reduction in fish numbers, and noise disturbance during construction.	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

		Siltation or pollution could result in deterioration of water quality, reducing fish biomass available.		invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	
Overall conclusion: **Integrity test**: Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development will not adversely affect the integrity of the Blackwater River (Cork/Waterford) cSAC (002170), in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					

Table 9.4: **Kilcolman Bog SPA (004095)**					
Summary of Key issues that could give rise to adverse effects: • **Disturbance and/or displacement and collision risk of species listed as qualifying interests.** • **In-combination effects with other projects.** • **Introduction of invasive species or biosecurity issues during construction.** **Conservation Objectives:** Kilcolman Bog SPA | National Parks & Wildlife Service (npws.ie)					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Whooper Swan (Cygnus cygnus) [A038]	To maintain or restore the favourable conservation condition.	Yes - See Section 9.10 below. In summary, Whooper Swans have been regularly recorded within vicinity of site. Both feeding and roosting sites located in close proximity to the proposed development site. In addition, a number of nocturnal movements over the site were recorded. Proposed development has potential for collision risk to Whooper Swan.	Yes - See Section 9.10 below. In summary, potential exists for disturbance from noise during construction of the proposed development and neighbouring developments in particular the Fiddane Solar Farm, Ballyroe Solar Farm, and Solar Farm Interconnectors should they be constructed simultaneously or consecutively at the time of year when the species is present in the area.	See Section 9.10 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. In addition, further mitigation was proposed at RFI stage to curtail turbines at night in the Spring and Autumn migration periods with the use of new technologies to identify swans in the vicinity.	No Reasonable doubt as to the effectiveness of proposed mitigation measures in relation to collision risk and insufficient information to determine the significance of potential disturbance/dispersal, in-combination impact during the construction period. See Section 9.10 below.
Overall conclusion: **Integrity test**:					

I am not satisfied based on the information on file, that the proposed development in combination with other plans or projects would not adversely affect the integrity of European site Kilcolman Bog SPA, site code 004095, in view of the site's Conservation Objectives.

Table 9.5: **Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)**					
Summary of Key issues that could give rise to adverse effects: • **Habitat loss, fragmentation or alteration.** **Conservation Objectives:** Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA | National Parks & Wildlife Service (npws.ie)					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Hen Harrier (Circus cyaneus) [A082]	To restore the favourable conservation condition	Yes Hen Harrier was observed once during winter 2019-20 surveys and twice during winter 2020-21 surveys. No evidence the species breeds on site or uses the site as a habitual winter roost. Wind farm site not within the core foraging range (Core range of 2km, with maximum range of 10km) of the SPA. However, the Applicant highlights that the site is within the core feeding range of nine non-designated but regionally important breeding areas for Hen Harrier (Ballyhoura Mountains), as established in the 2015 National Hen Harrier Survey.	No, The proposed development is not within the core foraging range of the SCI for this SPA. The potential species identified are therefore not considered part of the SPA population and the targets for the SPA will not be affected.	No mitigation required.	Yes

		Subsequent to the lodgement of the planning application, the NPWS published *The 2022 National Survey of breeding Hen Harrier in Ireland.* The Report states *inter alia* in relation to the Ballyhouras population: *Despite showing increases in previous national surveys, the Ballyhouras population is now lower than the total number of pairs recorded in 1998-2000 and it is evident that a significant population crash (63%) has occurred since the peak in 2005. Surveyors in the Ballyhouras recorded a range of activities (including human recreational activities such as scrambling, mountain biking and forestry management works) which are considered to be sources of disturbance to breeding hen harriers (Carravaggi et al., 2019). The development and spatial planning of new mountain bike track networks and trails for the Ballyhouras should consider hen harrier and other Annex 1 species (peregrine falcon) in their environmental assessments.* The Report notes that there were 6-7 pairs recorded in 2022. Effects on winter hunting habitat will be minimal loss of 2.25 Ha/2.1% of			

		improved grassland, loss of 2.17 Ha/3.6% of wet grassland). There will be felling activities and the permanent loss of plantation woodland and disturbance during felling and construction works for birds hunting within site and birds breeding/hunting nearby the site.			
Overall conclusion: **Integrity test:** Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development will not adversely affect the integrity of the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161) in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					

Table 9.6: **Lower River Shannon SAC (002165)**					
Summary of Key issues that could give rise to adverse effects: • **Impacts to water quality through construction related pollution events (e.g. chemicals, oil/fuel, cementitious materials etc.) or sediments/silt run-off.** • **Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.** • **Habitat loss, fragmentation or alteration.** • **Introduction of invasive species or biosecurity issues during construction.** • **In-combination effects with other projects.** **Conservation Objectives:** Lower River Shannon SAC | National Parks & Wildlife Service (npws.ie)					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook	Restore Maintain	Yes These species are assumed present in the Emlagh 27 watercourse. Siltation or pollution could result in a potential negative effect on	Yes Potential for proposed development to contribute to an in-combination effect	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and	Yes No doubt as to the effectiveness or implementation of mitigation

Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099]	Maintain	population structure and extent of spawning / juvenile habitats exists. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	on population structure of juveniles, on spawning beds and on juvenile habitat.	include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions	measures proposed to prevent direct or indirect effects on integrity.
Salmo salar (Salmon) [1106]	Maintain	Yes The species are assumed present in the Emlagh 27 watercourse. Siltation or pollution could result in a potential negative effect resulting in potential reduction in availability of spawning habitat, salmonfry abundance, smolt abundance and the reduction in number and distribution of redds on the Awbeg River. Introduction of invasive species/biohazards could have a potential negative effect on population structure of juveniles, on spawning beds and on juvenile habitat.	Yes Potential for proposed development to contribute to an in-combination effect on spawning habitat availability for adult salmon, on abundance of salmon fry, smolt and redds, and on water quality.	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.

				mitigation measures and conditions.	
Lutra lutra (Otter) [1355]	Restore	Yes This species is assumed present in the watercourses within the vicinity of the replant lands. There is potential for the species to potentially be using the watercourses on and adjacent to the wind farm site. Siltation or pollution could result in deterioration of water quality, reducing fish biomass available.	Yes Potential for contributing to cumulative increase in works taking place, a reduction in terrestrial habitat, and a cumulative reduction in fish numbers.	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Ecological Clerk of Works to be appointed to monitor compliance with mitigation measures and conditions.	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Overall conclusion: Integrity test Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development and the planting of lands in Co. Clare, will not adversely affect the integrity of the Lower River Shannon SAC (002165) in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.					

Table 9.7: **River Shannon and River Fergus Estuaries SPA (004077)**					
Summary of Key issues that could give rise to adverse effects: • **Disturbance and or displacement of species listed as qualifying interests due to potential water quality impacts during construction or disturbance of foraging/commuting routes or breeding habitats.** • **Introduction of invasive species or biosecurity issues during construction.** • **In-combination effects with other projects.** **Conservation Objectives:** River Shannon and River Fergus Estuaries SPA | National Parks & Wildlife Service (npws.ie)					
Summary of Appropriate Assessment					
Qualifying Interest feature	**Conservation Objectives**	**Potential adverse effects**	**In-combination effects**	**Mitigation measures**	**Can adverse effects on integrity be excluded?**
Lapwing (Vanellus vanellus) [A142]	To maintain the favourable conservation condition	Yes This species has a proposed zone of sensitivity (can experience disturbance impacts) of 800m. However, the SPA is c. 1km (1.7km in-stream) south of the proposed replant lands site, therefore beyond the impact of disturbance. This species could potentially forage in the proposed replant lands site, however no observations were recorded. In the event of emissions to water a potential negative effect resulting in potential reduction in prey availability may occur, therefore reducing the intensity of the use of the area, in the absence of appropriate mitigation.	Yes Potential for proposed development to contribute to a cumulative reduction watercourse quality when considered with other forestry applications in the area.	See Section 9.11 below. Best practice drainage and pollution prevention methods are set out in the NIS and include detailed measures to mitigate impacts to water quality. Biosecurity measures are also set out in the NIS to prevent introduction of invasive species/ biohazards. Tree felling will be subject to a Felling Licence Application.	Yes No doubt as to the effectiveness or implementation of mitigation measures proposed to prevent direct or indirect effects on integrity.
Overall conclusion:					

Integrity test: Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development and the planting of lands in Co. Clare, will not adversely affect the integrity of the River Shannon and River Fergus Estuaries SPA (004077) in light of the site's Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.

9.10. **Whooper Swan: Qualifying Interest of Kilcolman Bog SPA (004095)**

9.10.1. The Applicant highlights in Chapter 8 of the EIAR that the primary site for Whooper Swan in the surrounding area is Blackwater River SAC/Annagh Bridge, where flocks of this species were observed feeding in Improved agricultural grassland fields c. 1 km south of the proposed wind farm site. Flock sizes recorded ranged between 6-107 birds (averaging 45 birds), on several occasions over winter periods 2019-2020 and 2020/2021.

9.10.2. In terms of potential construction impacts, the Applicant states that Whooper Swan could potentially forage in the improved agricultural grassland onsite, however no observations indicating this occurs were recorded. It is argued that swans show high fidelity to foraging sites, and that their absence from the site and presence elsewhere can effectively be interpreted as there being no suitable foraging habitat or conditions for this species onsite. As such, it was considered by the Applicant in the original EIAR submitted to the Local Authority that the proposed development would have a long-term imperceptible impact on the Whooper Swan. In terms of potential operational impacts, the EIAR states that Whooper Swan were not recorded in the flight activity study area during VP surveys and that due to their absence from the wind farm site, no disturbance/displacement/barrier effects are predicted for Whooper Swan. The Applicant considered that disturbance and/or habitat loss would result in Temporary Imperceptible Impact. The EIAR concludes that there will be no significant residual impacts on Whooper Swan resulting from the proposed development.

9.10.3. Both the Local Authority and NPWS raised a number of concerns in relation to the EIAR's assessment with respect to potential impacts on Whooper Swan resulting from the development and neighbouring developments and as such, the Applicant was requested to submit a nocmig (nocturnal migration/Nocturnal Migration Call (NFC)) survey of the site and provide an updated assessment of any likely implications (direct and indirect) of the proposed development for Whooper Swan and other avian species, and to provide an assessment of the likely cumulative effects of development in the surrounding area. In response, the Applicant submitted additional rounds of dawn and dusk surveys that were undertaken during the months of February, March and April. An additional round of surveys was conducted in April 2022 to cover the spring migration period. Furthermore, two additional VPs were added in February 2022 to look at Whooper Swan roosting/foraging sites in the greater area. There were 37

records (5 heard and 32 actual sightings) of Whooper Swan during the 2021/2022 winter surveys. The maximum count of Whooper Swan observed in the study area at roost was 140 individuals on the 21st of February 2022. Other high counts include 117 birds on the 18th of February and 11 birds on the 9th of March 2022. Only a single sighting of birds (5) flying through the site was made on the 17th of February at a height of 50-100m. The Annagh Wind Farm Ornithological Surveys Report (October 2022) also highlights that the nocturnal activity analysis suggests that the locally wintering Whooper Swan population does not traverse the proposed wind farm at night during wintering period. *"However, it appears that either this flock, flocks from elsewhere, or a combination of the two can traverse the site during their departure*". Accordingly, the Applicant proposed that turbine activity at night would be curtailed during the Whooper Swan migration period between 15th September and 15 November and 1st March and 14th April. (I note that the First-party Appeal states that the Applicant is happy to curtail the turbines during the mitigation periods as referenced by the DAU, i.e. 21st September to 15th December and 21st February and 15th April.)

9.10.4. At this juncture, I will highlight that the Department of Housing, Local Government and Heritage made a submission (15th June 2023) (see attached Appendix B) (herein referred to as the DAU Ballyroe Submission) to the Local Authority in respect of Reg. Ref. 226901 relating to an amendment application to the permitted Ballyroe Solar Farm. (That application (lodged on 23rd December 2022) (and DAU submission) were made subsequent to the Local Authority refusing permission for the proposed wind farm (22nd December 2022)). The subject submission states that the NPWS carried out survey work over the winter of 2022/23 of fields within and directly adjacent to the Ballyroe solar development site where Whooper Swans up to 177 individuals are known to be supported, which the Department highlights exceeds the threshold for a site of national importance. Also, a significant night roost at the Ballyroe Quarry pond with a peak count of 173 Whooper Swans was counted in March 2023. The results of the NPWS surveys show that at the same time the number of Whooper Swan decreased at Kilcolman Bog, their numbers increased in the Awbeg floodplain (Churchtown area) in the townlands of Dromin, Ballyroe, Mountbridget, and Annagh South. In particular, the fields and quarry within the proposed Ballyroe solar farm amendment application were recorded as important foraging and night roost sites for the Whooper Swan with numbers of national importance roosting in Ballyroe quarry.

The Department's Ballyroe submission continues (and illustrated in Figure 1.0 of the submission) that the main commuting corridor between the townlands of Ballyroe and Annagh South where regular Whooper Swan flight path occur morning and evening is located between Ballyroe quarry to foraging grounds in the nearby Aghaburren, Dromin, Annagh South (Blackwater flats), Ballyroe and Caherconner townlands. (See Figure 1 attached with this Report illustrating the approximate location of the referenced townlands.) The Department stated that this area is an important and well-used dedicated Whooper Swan flight path. The Department states:

> *"Field surveys conducted by NPWS and by Barry O'Mahony, Ornithologist, in support of the current Ballyroe application and the proposed adjacent Coolcaum solar farm application (Planning Ref. 225681) concur in their findings that the Whooper Swan herd which forages and roosts in the* ***Awbeg Floodplain (Churchtown area) can be composed of a combined herd – the Kilcolman Whooper Swan herd and the more local Awbeg Floodplain (Churchtown area) herd of Whooper Swans****".* (Bold: My emphasis.)

9.10.5. The NPWS survey results clearly demonstrates ex-situ links between the Awbeg floodplain and Kilcolman Bog SPA. The two closest parcels of land located to the wind farm site that were identified by the Department as foraging areas are located approx. 660m to the west of the proposed metrological mast and c. 750m from proposed T06, respectively.

9.10.6. As outlined in Section 4.0 above, permission was refused for the proposed amendments to the Ballyroe solar farm (Reg. Ref. 226901) as it was deemed by the Local Authority that it would result in a direct loss of an area of core foraging habitat for Whooper Swan. However, the parent permission for the solar farm (Reg. Ref. 204041) will remain live until 2031 (Condition No. 2 of the subject Permission). From a review of CCC Ref. Reg. 204041, I note that no significant impacts were anticipated on Kilcolman Bog SPA in the "Natura Impact Statement" (dated December 2019), "*as there are no pathways (physical or hydrological connections which could act as a route for potential impacts) from the source site*" to the SPA. The Local Authority in a report entitled 'Ecology - Primary Report' (dated 10th March 2020) initially considered that the Whooper Swans in the area were linked to the Blackwater Callows SPA (c. 35km from the site). No link of any ex-situ relationship with Kilcolman Bog SPA was not considered. Whilst permission was refused for the amendment application in line with

the DAU's comments on the grounds that it would result in a direct loss of an area of core foraging habitat for Whooper Swan, it is my view, having regard to the similarities between the original solar farm permission and the amendment application at Ballyroe, that it is reasonable to conclude that the original permission will also result in the same impacts on Whooper Swan, if implemented.

9.10.7. I highlight that the Observation from John Maher to the Local Authority in respect of the proposed wind farm development, identifies roosting and foraging areas for Whooper Swan. They are largely consistent with the NPWS survey results. However, the Observation also states that there are direct flight paths from Annagh South to the Annagh Bogs area, crossing over the wind farm site in close proximity to T04, T05 and T06 (see Diagram 2 submitted with Mr Maher's Observation).

9.10.8. Potential Impacts on Whooper Swan

9.10.9. In addition to the information provided on file, my assessment has regard to the following key issues:

- the NPWS's surveying results (which are more up-to-date than the Applicant's) record higher populations of Whooper Swan (max. 177 No.) in the area than that compared to that on this file (originally EIAR - 107 No. and Avian Monitoring Report submitted at RFI stage – 140 No.);
- the NPWS survey results indicate strongly that ex-situ connectivity exists between the Awbeg floodplain and Kilcolman Bog SPA with movements of Whooper Swan between the two areas over the winter period; and
- the fact that the permitted Ballyroe solar farm would result in a direct loss of an area of core foraging habitat for Whooper Swan (a number of which are connected to Kilcolman Bog SPA).

9.10.10. The general conservation objective for the Kilcolman Bog SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests (SCI) for this SPA. (I consider that the proposed development poses no possible risk to the other SCI species or to wetland habitat of the SPA due to the distance and habitat required for those species). Site specific conservation objectives have not been set for the SPA, however, based on other sites where Whooper Swan is an SCI, the following targets and attributes are of relevance in

maintaining or restoring the favourable conservation status of the species with emphasis in bold on the attribute of relevance to ex-situ areas in particular:

- Population trend: Long term population trend stable or increasing
- Distribution: there should be **no significant decrease in the numbers or range of areas used** by waterbird species, other than that occurring from natural patterns of variation.

9.10.11. Similar to the DAU, I consider the most likely impacts on Whooper Swan as a result of the proposed development relate to the wind farm site, and not to other aspects of the proposal including grid connection works, turbine delivery works, and replant lands, having regard to the nature and scale of these latter works and their proximity to Kilcolman Bog SPA. I consider the primary impacts to be:

1. Disturbance/Dispersal
2. Collision/Migration.

My assessment of these impacts is summarized in Table 9.8 below.

Table 9.8: Summary of Potential Impacts on Whooper Swan		
	Construction Phase	**Operational Phase**
Disturbance/Dispersal		
Proposed Development Alone	Having regard to: • Proximity (>600m[10]) between subject site and foraging and roosting areas identified by the Applicant and NPWS survey records; • Noise construction levels predicted to be less than 65 dB LAeq,1hr[11]; • Visual screening including hedgerows and forestry areas between the subject site and foraging and roosting areas identified by the Applicant and NPWS survey records; • No loss of habitat currently used by Whooper Swan identified by the Applicant and NPWS survey records; **no significant residual impacts** in terms of population trends or the numbers or range of areas used by Whooper Swan likely to occur.	Having regard to: • Limited human activity required on-site during this phase; • Proximity between subject site and foraging and roosting areas identified by the Applicant and NPWS survey records; • Operational noise levels predicted at sensitive receptors in the area[12] • Visual screening between the subject site and foraging and roosting areas identified by the Applicant and NPWS survey records; • No loss of habitat currently used by Whooper Swan used by Whooper Swan identified by the Applicant and NPWS survey records; **no significant residual impacts** in terms of population trends or the numbers or range of areas used by Whooper Swan likely to occur.
In-Combination Assessment	Having regard to: • Loss of foraging and potential disturbance to roosting areas as a result of the Ballyroe solar farm; • Collective levels of human activity and associated construction noise from the proposed development and neighbouring renewable energy projects; • The number and location of permitted and proposed renewable energy projects in the immediate vicinity including Ballyroe Solar Farm; • Presence of improved agricultural grasslands on the subject site;	Having regard to: • Limited human activity required on-site for both this project and neighbouring renewable energy projects; • Operational noise levels from wind farm and neighbouring renewable energy projects; • Visual screening in the area; **no significant new residual impacts** resulting in the numbers or range of areas used by Whooper Swan likely to occur (notwithstanding that there will be a loss of foraging and disruption to roosting areas likely resulting in significant disturbance/dispersal to Whooper Swan as a result of the Ballyroe Solar Farm as highlighted by the DAU).

[10] See Figure 1 included in the DAU's Ballyroe submission in respect of Reg. Ref. 226901.

[11] See Section 8.11.4 above. In addition, noise disturbance levels of up to 70dB have been shown as unlikely to generate behaviour responses in waterbirds (N Cutts K Hemingway & J Spencer Version 3.2, March 2013 *Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects* University of Hull).

[12] I highlight that Whooper Swan was not considered as a sensitive receptor in the Applicant's noise analysis. However, I consider the EIAR's noise analysis nonetheless provides a good indication of general noise levels in the surrounding environment.

	there is potential for the dispersed Whooper Swan from Ballyroe Solar Farm to relocate to parts of the wind farm site. Whilst it is noted that the species shows fidelity to foraging areas in general, it is clear from the NWPS survey results that they may relocate under certain circumstances. I do not consider there is sufficient information on file to determine with accuracy and confidence the significance of further potential disruption/dispersal impact on Whooper Swan as a result of the proposed development, should it be constructed during the same winter period as the Ballyroe solar farm and neighbouring renewable energy projects, noting the scale of these projects and their proximity to one another. I acknowledge that the impact would be temporary, however I consider that there is insufficient information to form a full, precise and definitive conclusion capable of removing all reasonable scientific doubt as to the significance of this impact on numbers and range of areas used by Whooper Swan.	
Collision/Migration		
Proposed Development Alone	Having regard to: • The nature and scale of the construction works **no significant collision impacts** resulting in the numbers or range of areas used by Whooper Swan likely to occur.	Having regard to: • The Applicant's survey results indicating Whooper Swan traversing the site during their departure / spring migration; • The Applicant's reliance to curtail the turbine movement (at night during the Spring and Autumn migration periods) with the use of new technologies to facilitate smart curtailment (e.g. radar) that would identify Whooper Swan approaching the proposed wind farm and trigger the immediate shut down of all turbines, which based on untested mitigation technology I consider that there is potential for the proposed development to significantly impact on the population trend of the Kilcolman Bog SPA having regard to its SCI ex-situ connectivity between the

		SPA designated area and the Awbeg floodplain.
In-Combination Assessment	Having regard to: • The nature and scale of the construction works **no significant collision impacts** resulting in the numbers or range of areas used by Whooper Swan likely to occur.	Having regard to: • The nature of the neighbouring projects both permitted and proposed; • No comments on file in relation to any collisions from Whooper Swan in respect of the Bollard Wind Farm or Rathnacally Wind Farm; **no significant new residual impacts** resulting in the numbers or range of areas used by Whooper Swan likely to occur.

9.10.12. Potential Disturbance/Dispersal Impacts: Construction and Operational Phases

9.10.13. In terms of potential disturbance/dispersal, I note the DAU submission (12th December 2022)[13] in respect of this appeal case, which states that as the proposed turbines are located at distances of more than 600m from the feeding and roosting areas, disturbance from moving blades is not considered significant. The Local Authority's Ecology Officer notes the DAU comments, but states "*I would caution that the sample size of data utilised to inform the distribution of foraging / roosting Whooper swan in the area is limited and, in my opinion, a complete understanding of the spatial movements of swan within the area has yet to be determined*." However, having regard to the NPWS more up-to-date survey records, I consider that the DAU's comments in relation to disturbance and dispersal both during the construction and operational phase are still valid when the application is considered by itself. As such, I consider that the proposed development would not result in any new significant disturbance/disposal residual impacts on the population or number or range of areas used by Whooper Swan.

9.10.14. Potential In-combination Disturbance/Dispersal Impacts: Construction and Operational Phases

9.10.15. There is potential for the dispersed Whooper Swan from Ballyroe Solar Farm to relocate to parts of the wind farm site, acknowledging that parts of the site are in pastural use. Whilst it is noted that the species shows fidelity to foraging areas in general, it is clear from the NWPS survey results that they may relocate under certain

[13] i.e. prior to its submission in respect Ref. Reg. 226901.

circumstances. Furthermore, as highlighted in Section 9.10.2 above, the Applicant accepts that there is potential for Whooper Swan to forage on the Improved agricultural grassland within the wind farm site (notwithstanding that there were no records of same represented in this application). Should the proposed development be constructed over the same winter period (April-October) as the Ballyroe Solar Farm, the Improved agricultural grassland would not be available to the species, resulting in potential further dispersal of the species. I highlight that it is proposed that the construction works for the wind farm will be undertaken throughout the calendar year. As such, mitigation by avoidance of any disturbance/dispersal by restricting works to the spring/summer months, is not relevant in this instance.

9.10.16. As outlined above in Section 4.0, there is a significant number of other large-scale projects in the immediate area (both permitted and proposed). The total site area for the two permitted solar farms (Fiddane (c.68.8ha) and Ballyroe (c.102.76ha)), the permitted interconnector (c. 15.175ha) and the subject site (78.6ha) accumulates to c. 265ha. This does not include the proposed Coolcaum solar farm (42.6 ha) and the Ballyroe substation (5.8ha), nor any other smaller scale developments permitted or proposed (including any exempted development) in the vicinity. Should all these developments be constructed during the same winter period, the potential for further disturbance to the dispersed Whooper Swan from Ballyroe Solar Farm may significantly intensify.

9.10.17. I acknowledge that there is no way of determining with certainty where the dispersed Whooper Swan from the permitted Ballyroe Solar Farm may relocate if the subject solar farm project is constructed. However, having regard to the characteristics of the subject wind farm site (including *inter alia* its rural nature, the provision of improved agricultural grassland, watercourses, flood zones, etc.), it cannot be ruled out with confidence that the site may potentially be used by the dispersed species. The proposed development could result in a loss of number and range of areas potentially available to the Kilcolman Bog species (and the local Awbeg floodplain (Churchtown area) herd).

9.10.18. I acknowledge that the impact would be temporary, however I do not consider there is sufficient information on file to determine with accuracy and confidence the extent of the significance of further potential disruption/dispersal impact on Whooper Swan as a result of the proposed development, should it be constructed during the same winter

period as the Ballyroe solar farm and neighbouring renewable energy projects, noting the scale of these projects and their proximity to one another.

In conclusion, in my opinion, as it is not possible to form a full, precise and definitive conclusion capable of removing all reasonable scientific doubt as to the significance of potential disturbance/dispersal impact on numbers and range of areas used by Whooper Swan, the Board is precluded from granting permission for the proposed development.

9.10.19. Potential In-combination Collision/Migration Impacts: Construction and Operational

9.10.20. I share the concerns of the Local Authority's Ecology Officer with respect to potential collision risk and barrier effect, acknowledging that while the confirmed number of nocturnal movements over the site was relatively low at 5, the number of calls registered is high. On the night of the 16th of March, a minimum of 406 calls (300, 76 and 30 respectively) were recorded with a further 91 calls (86 and 5 respectively) on the 23rd of March. The results of the survey would suggest that the locally wintering Whooper swan population does not traverse the proposed wind farm site at night during their wintering period. However, as highlighted by the Applicant it appears that either this flock, flocks from elsewhere, or a combination of the two traverse the site during their departure / spring migration. Hence, the Applicant has proposed to curtail the turbine movement at night during the Spring and Autumn migration periods with the use of new technologies to facilitate smart curtailment (e.g. radar) that would identify Whooper Swan approaching the proposed wind farm and trigger the immediate shut down of all turbines. It is proposed that annual monitoring be conducted for the first three years of the operational phase to monitor the efficacy of the curtailment and to refine the periods if necessary. I note that Whooper Swan was not included in the collision risk modelling submitted with the application (Appendix 8.8).

9.10.21. Both the Ecology Officer and DAU raise significant concerns in relation to this mitigation, advising that such post decision agreement on potential impacts and mitigation measures that are based on untested mitigation technology calls into question the completeness of the Appropriate Assessment. I concur that reliance on post consent monitoring to identify any adverse effect is not in line with the obligations of Article 6(3) of the Habitats Directive. In my opinion, untested mitigation measures

cannot be relied upon to determine beyond reasonable scientific doubt that the proposed development would not adversely impact on SCI of Kilcolman Bog SPA. Accordingly, I recommend that permission is refused on this basis.

9.10.22. The Applicant contends that the Planning Authority did not have regard to the DAU's suggested condition for curtailment (see Section 6.1.1 above). Having regard to the DAU's Ballyroe submission which highlights the extent of the ex-situ connectivity between Awbeg floodplain and Kilcolman Bog SPA for Whooper Swan and that the permitted Ballyroe solar farm will result in a direct loss of foraging area and disturbance to roosting areas for Whooper Swan, I do not consider that the suggested condition is appropriate.

9.10.23. Notwithstanding the fact that it has no bearing on the planning assessment, I concur with the Ecology Officer comments with respect to the viability of the proposed development should the turbines be curtailed for approximately 5 months of the year in respect of Whooper Swan spring and autumn migration, in addition to the proposed curtailment of turbines during bat activity season (April-October) and potential curtailment due to shadow flicker.

9.10.24. Having regard to the foregoing, it cannot be determine beyond reasonable scientific doubt that the proposed development would not adversely impact on SCI of Kilcolman Bog SPA and there potentially may impact on the integrity of the European Site.

9.10.25. <u>Conclusion</u>

9.10.26. On the basis of the information on file, it cannot be determined with confidence that the proposed development alone during its operational phase would not result in a significant adverse collision impact on Whooper Swan associated with the Kilcolman Bog SPA and as such the proposal would be inconsistent with the site's conservation objectives. Accordingly, I recommend that permission is refused on these grounds.

9.10.27. Furthermore, I do not consider that there is sufficient information on file to determine that the proposed development in combination with the permitted Ballyroe Solar Farm (CCC Reg. Ref. 204041) and other renewable energy projects in the vicinity, would not result in further disturbance/dispersal of the dispersed Whooper Swan from the Ballyroe Solar Farm should these projects be constructed in the same winter period (October-April). Should the Board refuse permission on these grounds, in the interest of fairness, I recommend that the Board request the Applicant to comment on the DAU

Ballyroe submission and associated NPWS survey results with respect to the proposed wind farm prior to issuing a final decision.

9.10.28. As outlined in Section 10 below, the Board did issue a request for information from the Applicant in relation to discrepancies in the planning documentation. The Applicant was not requested at that time to comment on the DAU's Ballyroe submission as clarity was required in the first instance as to the correct version of the documentation to be assessed. Furthermore, I was not aware of the DAU Ballyroe submission until after I had completed my assessment of the Applicant's EIAR Biodiversity Chapter and NIS.

9.11. Mitigation Measures

9.11.1. The proposed mitigation measures are set out in Section 4.4 of the NIS and include the following:

9.11.2. Avoidance by design

- Hardstandings kept to the minimum necessary to minimise land take of habitats and flora.
- Site design and layout deliberately avoided direct impacts on designated sites.
- Cabling to be placed underground, significantly reducing collision risk to birds.
- Grid connection routes selected to minimise land take of potentially sensitive habitats by using a mixture of public roads and access tracks.
- Buffers maintained between wind farm infrastructure and hydrological features such as rivers and streams. One new stream crossing shall be required within the main wind farm site. A clear-span design has been selected to avoid instream works, and to minimise disturbance of banks and associated indirect effects such as siltation.
- Use of Horizontal Directional Drilling (HDD) where the grid connection crosses watercourses and avoidance of in-stream works.
- The grid cable will be incorporated in the clear span bridge where it crosses the Oakfront stream within the proposed site.
- The design of the grid connection was also carried out with cognisance to ecological features. Cables are to be placed underneath public roads where possible to avoid impact to roadside hedgerows.

9.11.3. Mitigation Measures during the construction phase include *inter alia:*

- Implementation of Construction and Environment Management Plan (CEMP).
- Appointment of a Project Ecologist/Ecological Clerk of Works (ECoW) and an Environmental Manager.
- Communication with IFI.
- Water monitoring.
- Invasive species: Eradication prior to construction in accordance with the invasive species management plan (ISMP).
- Silt management: Silt traps and silt fencing to slow water flow, increase residence time, and allow settling of silt in a controlled manner. Settlement ponds, as detailed in the Surface Water Management Plan.
- Habitats/flora: No disturbance to habitats or flora outside the proposed project area with all works restricted to the immediate footprint of the development and kept separate from any key areas for biodiversity; machinery and equipment stored within the site compound; designated access points to be established within the site and all construction traffic will be restricted to these locations with access primarily via the existing L1322; HGVs to approach the site via this road from the East; demarcation of exclusion zones.
- Lighting: Construction during daylight hours to minimise disturbances to active nocturnal species. Limited operations such as concrete pours, turbine erection etc. require night-time operating hours and BCT guidance note 08/18 will be implemented when determining appropriate lighting for these works.
- Toolbox talks to minimise disturbance to key species during construction.
- Plant: Inspections each day prior to use; defective plant shall not be used until the defect is satisfactorily fixed; all major repair and maintenance operations will take place off site.
- Pollution incident control response: Training of personnel; Emergency Response Plan; 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.

- Surface water: 50m buffer zone maintained for all streams with the exception of existing road upgrades; design of site drainage to complement existing overland flow and existing onsite drainage; three-stage treatment train (swale – settlement pond – diffuse outflow) to retain and treat the discharges from all hard surface areas; regular clearing of settlement ponds; Cleared material shall be interred securely to prevent ingress into the drainage network.
- Tree felling: Felling license to be in place prior to works commencing on site; tree clearance methods to follow relevant guidance from DAFM and Forestry Service; a minimum buffer zone for felling areas and aquatic zones of 15-20m will be applied; Silt fences will be required within the drainage channels; where damage or serious rutting has started to occur, timber extraction will be suspended immediately and relocation of the extraction rack will be used to avoid timber extraction routes acting as conduits for surface water flows, thus avoiding adverse effects on the surrounding watercourses; felling will be undertaken in the Spring to facilitate the sowing of native grass seeds post-harvest to aid sediment filtration and nutrient absorption; machine operations will not take place in the 48 hour period before, during or after heavy rainfall; removal of brash from felling areas within 20m of forestry drains to reduce nutrient seepage.
- Road construction: All track widening will be undertaken using clean uncrushable stone with a minimum of fines to reduce the risk of suspended solid releases to receiving watercourses. Still traps will be placed in the new roadside swales. Proposed new tracks will be drained as via roadside swales with stilling ponds at the end of the swale. These grassed swales will serve to detain flow and reduce the velocities of surface water flows. The swales will be 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. Where roadside drains are laid at slopes greater than 2%, check dams will be provided. Site drainage, including silt traps and settlement 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 settlement ponds will remain in place during construction phase. The settlement ponds will 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.

- Drainage: No interference with natural watercourses; drains around hard-standing areas will be shallow to minimise the disturbance to sub-soils; interceptor cut-off drains on the upslope side of the site access roads with diffuse discharge over land; 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 remain in place during construction phase. 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. Site access roads have been laid out to reduce the longitudinal slope of roadside drains and to follow natural flow paths. Where roadside drains are laid at slopes greater than 2%, check dams will be provided. Where existing tracks will be used to access the site, roadside drains alongside these tracks will be cleared of obstructions only where strictly necessary (i.e. if flooding occurs). Vegetation and other obstructions provide sediment arrest and flow attenuation functions and as such will not be interfered with unless absolutely necessary.
- Wheel wash facilities.
- Concrete: Timing of concrete pours to occur outside periods where heavy rainfall would be expected. regular review of weather forecasts; delivery truck chute washing only to designated area with a settlement lagoon provided to receive all run-off. During construction concrete will be kept out of all 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: will only be carried out at designated refuelling station locations and no refuelling will take place within 50m of the stream zone or any sensitive habitats. Vehicles will never be left unattended during refuelling and it will only be carried out by dedicated trained personnel.
- Spill control: Appropriate equipment, such as oil soakage pads, will be kept within the construction area and in each item of plant to deal with any accidental spillage. All staff will be trained in appropriate spill control measures.
- Welfare utilities: Portaloos and/or containerised toilets and welfare units will be used to provide toilet facilities for site personnel and waste will be removed from site via a licensed waste disposal contractor.
- Minor water course crossing – dry conditions: Duct installation will only take place during dry periods to ensure no in-stream works and an environmental monitor shall supervise the works.
- Standing water: This water will be pumped into the site drainage system (but not directly into settlement ponds – minimum setback 20m upstream of settlement pond), which will be constructed at site clearance stage, in advance of excavations for the turbine bases.
- Cross-drains: Suitably sized cross-drains will be provided for drainage crossings to convey flows from agricultural drains and forestry drains across the access tracks, to prevent a risk of clogging.
- Flooding: Settlement ponds are to be provided as part of the drainage system for the development. The settlement ponds, together with the swales, will serve to reduce velocities in the surface water runoff draining from the access tracks and hardstanding areas and will provide retention of the flows. This will also mitigate any increase in the risk of flooding. No construction personnel, operation or maintenance personnel will be permitted on site during extreme flood events.
- Excavated material: Excavated material will be re-used on-site where possible for berms etc. Surplus material will be removed from the site; Surplus soil or rock excavated during the course of the works will be used on site in the form of landscaping including low berms, where appropriate. A setback distance of

at least 100m from watercourses will be adhered to when storing temporary spoil. Temporary spoil heaps will be compacted and covered to minimise sediment-laden runoff. No spoil stockpiles will be left on site after construction. Temporary stockpiles of sand/stone and other materials will be covered with sheeting when not in use to prevent washout of fines during rainfall. All stockpile material will be bunded adequately and protected from heavy rainfall to reduce silt runoff, where necessary. Adequate security will be provided to prevent spillage as a result of vandalism.

- Contaminated material: Any contaminated soils will be handled, removed and disposed of in accordance with statutory requirements for the handling, transportation and disposal of waste. Contaminated material will be left in-situ and covered, where possible until such time as WAC (Waste Acceptance Criteria) testing is undertaken in accordance with recommended standards and in-line with the acceptance criteria to a suitably licenced landfill or treatment facility as detailed in the waste treatment management plan within the CEMP
- Traffic management: All traffic will adhere to the traffic management plan within the CEMP.
- Grid Connection Route (GCR): The crossing of the Rathnacally Stream on the L1322 will be via horizontal directional drilling (HDD), Although no-instream works are proposed, the drilling works will only be completed during a dry period between July and September (as required by Inland Fisheries Ireland for in-stream works) to avoid the salmonid spawning season and sensitive life stage period. Mitigation measure 38 will be implemented. A pre-construction otter survey to reconfirm the findings of the FT surveys undertaken in 2021 will be undertaken 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 need to be obtained from the NPWS to facilitate drilling works. Excavation of the grid route trench will require excavation of soils/subsoils which has the potential to impact the water quality and aquatic habitat of receiving watercourses. Excavated spoil emanating 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 offsite, 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, stilling ponds, drain blocking etc.) are outlined above. On the Rathnacally Stream, silt curtains and floating booms will also be used where deemed to be appropriate, in consultation with IFI. An Ecological Clerk of Works (ECoW) will monitor both turbidity and observe the riverbed during the drilling process to detect any leakage (frac-out) of drilling fluid. Should this leakage be observed, works will cease immediately. The GCR crossing of the Oakfront River (WF-HF5) will be via a single span, pre-cast concrete bridge. This will avoid the requirement for instream works. Nevertheless, installation will only be completed during a dry period between July and September (as required by Inland Fisheries Ireland for in-stream works) to avoid the salmonid spawning season and sensitive life stage period. Potential releases of sediment-laden surface run-off as a result of bank clearance works to facilitate bridge installation/access will be mitigated against through the water quality mitigation measures applied elsewhere on site.

- Horizontal Directional Drilling: An Environmental Engineer with a “stop work” authority will be engaged to monitor the construction phase of the development when the water crossing is being undertaken. The working area around the bridge/culvert crossings will be fenced off prior to the commencement of works to avoid damage to bankside habitat Watercourses will be visually inspected Should increase levels of siltation be recorded within the watercourses during the course of the construction phase, the environmental auditor will seek to halt construction works until the source of the pressure can be found and remediated Surplus material will be removed from the site to an appropriate facility. There will be no stockpiling of excavated material. A setback distance of at least 20m from watercourses will be adhered to when storing temporary spoil Prior to any works taking place near water courses the Inland Fisheries Ireland will be consulted. Construction works onsite will be timed to occur outside periods where heavy rainfall would be expected Silt traps will be regularly maintained during the construction phase. All personnel working

onsite will be trained in pollution incident control response. Appropriate signage will be placed along the proposed route outlining the spillage response procedure and a contingency plan to contain silt. A regular review of weather forecasts of heavy rainfall is required, and the contractor is required to prepare a contingency plan for before and after such events Visual inspection to take place at all times along the bore path of the alignment. Silt fences will be constructed around proposed work areas prior to commencement of works. No refuelling will take place within 50m of the stream zone or any sensitive habitats. During the drilling process, a mixture of a natural, inert and fully biodegradable drilling fluid will be used.

9.11.4. Mitigation Measures during the operational phase include *inter alia:*

- Inspections: Quarterly inspections of the erosion and sediment control measures on site will be undertaken for the first year following construction and annually thereafter to ensure operational efficiency.
- Management of hydrocarbons: The substation transformer and oil storage tanks will be in a concrete bunded capable of holding 110% of the oil in the transformer and storage tanks. Turbine transformers are located within the turbines, so any leaks will be contained.
- Settlement ponds: Settlement ponds will be left in place during the operational phase to be further utilised during the decommissioning phase. Ponds will be fenced to restrict access.
- Invasive Species Management Plan: invasive species will continue to be treated within the project area according to the invasive species management plan for as long as they persist within the site.
- Lighting on turbines: Lighting will be fitted with baffles to ensure that the light is directed skywards and will not be discernible from the ground.
- Vegetation-free buffer zones: The vegetation-free buffer zones around all turbines will be managed and maintained during the operational life of the development. These will be kept clear by mechanical means only; no chemical methods will be used.

In addition, the following mitigation measures were proposed at RFI Stage:

1. From the commencement of operation of the turbines curtailment will be applied during the Autumn (15th of September to the 15th of November) and Spring (1st March - 14th April) migration periods. Curtailment is required during the nocturnal period (dawn to dusk).
2. Annual monitoring shall be carried out for the first three years of the operational phase of the wind farm to monitor the efficacy of the measure and to refine the extent of these curtailment periods. An annual report detailing the results of this monitoring shall be submitted and agreed with Cork County Council and NPWS. This monitoring shall account for annual variation in migration patterns and ensure that curtailment is targeted to key period of movement for the species.
3. The use of new technologies to facilitate smart curtailment (e.g. radar), to identify whooper swan approaching the proposed wind farm site and trigger the immediate shut down of all turbines, shall be agreed in advance with Cork County Council and NPWS.

9.12. **Integrity test**

9.12.1. Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development and the planting of lands in Co. Clare, will not adversely affect the integrity of the River Shannon and River Fergus Estuaries SPA (004077), Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161), Lower River Shannon SAC (002165), and Blackwater River (Cork/Waterford) SAC (002170); in light of the sites' Conservation Objectives. No reasonable scientific doubt remains as to the absence of such effects.

9.12.2. Following the appropriate assessment and the consideration of mitigation measures, it cannot be determined with confidence that the proposed development alone during its operational phase would not result in a significant adverse collision impact on Whooper Swan associated with the Kilcolman Bog SPA thereby negatively impacting on the site's Conservation Objectives (.i.e. To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA, which includes Whooper Swan).

9.12.3. Furthermore, I consider that there is insufficient information on file to form a full, precise and definitive conclusion capable of removing all reasonable scientific doubt as to the significance of potential disturbance/dispersal impact on numbers and range

of areas used by Kilcolman Bog SPA Whooper Swan should the proposal be constructed during the same wintering period as the Ballyroe solar farm (and other renewable energy projects in the vicinity). As such, potential adverse impacts on the integrity of Kilcolman Bog SPA (004095) cannot be ruled out.

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

9.13. **Appropriate Assessment Conclusion**

9.13.1. The proposed development has been considered in light of the assessment requirements of Sections 177U and 177V of the Planning and Development Act 2000, as amended.

9.13.2. Having carried out screening for Appropriate Assessment of the project, it was concluded that it may have a significant effect on the:

- Blackwater River (Cork/Waterford) SAC (002170);
- Kilcolman Bog SPA (004095);
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161);
- River Shannon and River Fergus Estuaries SPA (004077); and
- Lower River Shannon SAC (002165).

9.13.3. Consequently, an Appropriate Assessment was required of the implications of the project on the qualifying features of those sites in light of their conservation objectives of relevance to the proposed development.

9.13.4. Following an Appropriate Assessment, it has been ascertained that the proposed development, individually or in combination with other plans or projects could adversely affect the integrity of Kilcolman Bog SPA (004095).

9.13.5. This conclusion is based on a full and detailed assessment of all aspects of the proposed development including proposed mitigation measures in relation to the Conservation Objectives of these European sites and an assessment of likely in-combination effects with other plans and projects.

10.0 Procedural Matters

10.1. My assessment of this appeal case has been based on the hard copy documentation received by Cork County Council. I highlight that there are a number of discrepancies between the hard copy version of the EIAR and that available for public viewing on Cork County Council's planning website. The First-Party Appellant confirmed in correspondence to the Board on 28th August 2023, that the correct version of the planning documentation was the hard copy version and that the discrepancies are limited to Chapter 8 (Biodiversity) of the EIAR. A schedule of the discrepancies was included, two of which were considered to be 'material' by the Appellant. Having reviewed the schedule, I consider that there is a number of material differences between the versions of this Chapter including those identified by the Appellant. As such, in the interests of clarity and transparency, if the Board is minded to grant permission for the proposed development, it may wish to seek that the planning documentation is readvertised and invite submissions in respect of same.

11.0 Recommendation

I recommend that planning permission should be refused for the reasons set out below.

12.0 Reasons and Considerations (Draft Order)

1. Insufficient information has been provided to enable the Board to determine beyond reasonable scientific doubt that the proposed development alone during its operational phase would not result in a significant adverse collision impact on Whooper Swan, a species of conservation interest of the Kilcolman Bog SPA (site code:004095) and potentially an adverse effect of the integrity of the SPA. In such circumstances, the Board is precluded from granting permission for the proposed development.
2. Insufficient information has been provided to enable the Board to determine beyond reasonable scientific doubt that the proposed development in-combination with the permitted Ballyroe Solar Farm (CCC Reg. Ref. 204041) and other renewable energy projects in the vicinity that the proposed

development would not result in significant new residual disturbance/dispersal impacts on Whooper Swan, a species of conservation interest of the Kilcolman Bog SPA (site code:004095) and potentially an adverse effect of the integrity of the SPA, should these projects be constructed in the same winter period (October-April). In such circumstances, the Board is precluded from granting permission for the proposed development.

3. The Board is not satisfied that significant residual impacts on the local Awbeg floodplain (Churchtown area) herd of Whooper Swan can be ruled out and as such the proposed development would be inconsistent with Objective BE 15-2 of the Cork County Development Plan 2022-2028. Accordingly, having regard to the proper planning and sustainable development of the area, planning permission is refused for the proposed development.

Appropriate Assessment: Stage 1

In completing the screening for Appropriate Assessment, the Board accepted and adopted the screening assessment and conclusion reached in the Inspector's Report that the Blackwater River (Cork/Waterford) cSAC (002170); Kilcolman Bog SPA (004095); Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161); and River Shannon and River Fergus Estuaries SPA (004077) and Lower River Shannon SAC (002165) are the only European sites for which there is a possibility of significant effects and which, must therefore be subject to Appropriate Assessment.

The Board considered the submitted Screening Reports for Appropriate Assessment, the Natura Impact Statements and all other relevant submissions and carried out an appropriate assessment in relation to the potential effects of the proposed development on the above referenced European sites. The Board noted that the proposed development is not directly connected with or necessary for the management of a European site and considered the nature, scale and location of the proposed development, as well as the report of the inspector. In completing the appropriate assessment, the Board adopted the report of the inspector and concluded that it cannot be determined beyond reasonable scientific doubt that the proposed development, individually or in combination with other plans or projects, would not

likely adversely affect the integrity of Kilcolman Bog SPA (004095) in view of the site's Conservation Objectives.

Environmental Impact Assessment:

The Board completed an environmental impact assessment of the proposed development taking account of:

(a) the nature, scale, location and extent of the proposed development,

(b) the Environmental Impact Assessment Report and associated documentation submitted in support of the planning application, including the further information material,

(c) the submissions received during the course of the application, and

(d) the Inspector's Report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the Applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the Applicant and submissions made in the course of the planning application.

The Board considered that the main significant direct and indirect effects of the proposed development on the environment are, and would be mitigated, as follows:

- **Biodiversity:** Potential significant effects on habitats, mammals, bats, birds, except Whooper Swan, and aquatic ecology in the construction phase and bats in the operational phase which would be mitigated by the implementation of the mitigation measures contained in the Environmental Impact Assessment Report, including the Construction Environmental Management Plan, good practice construction measures, timing of vegetation removal, water pollution prevention measures, provision of bat boxes, use of buffer zones, biosecurity measures and the appointment of an Ecological Clerk of Works and Environmental Manager. Further pre-commencement biodiversity surveys are also proposed.

However, the proposed development could potentially result in significant residual impacts on the local Awbeg floodplain (Churchtown area) Whooper Swan. There is significant uncertainty as to the likely effectiveness of the proposed mitigation measures proposed to address the collision impacts of the development on Whooper Swan. Furthermore, should the proposed development be constructed in the same wintering period as the Ballyroe Solar Farm (and other neighbouring renewable energy project in the vicinity of the site), it may result in further disturbance/dispersal impacts on the local herd. It is considered that the proposed development is inconsistent with Objective BE 15-2 of the Cork County Development Plan 2022-2028.

- **Population and Human Health**: There will be a positive impact on the socio-economic profile of the area due to community funding; 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. Noise, vibration and shadow flicker during the construction and/or the operational phases would be avoided by the implementation of the mitigation measures.
- **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.
- **Material Assets, Cultural Heritage and the Landscape**: 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 commercial forestry, agricultural uses, the existing Rathnacally Wind Farm and Boolard Wind Farm and the nature and characteristics of the area.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that the effects of the development on the environment, by itself and in combination with other plans and projects in the vicinity, would not be acceptable due to the impact on Whooper Swan. In doing so the Board adopted the report and conclusions of the inspector.

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.

Susan Clarke
Senior Planning Inspector

27th February 2023

Appendix A: Landscape Drawing submitted in respect of Reg. Ref. 236099

Appendix B: Department of Housing, Local Government and Heritage's submission (15th June 2023) in respect of Reg. Ref. 226901

Existing vegetation to be retained and protected

Mamal friendly fencing

Mamal friendly fencing

VP16

VP17

Existing scrub (WS1) to be retained

Existing watercourse to be retained with a 10m wide ecological exclusion zone buffer

Existing wet ditch to be retained with 2m wide ecological exclusion zone buffer

Existing vegetation to be retained and protected

Existing mixed broadleaf conifer woodland (WD2) to be retained

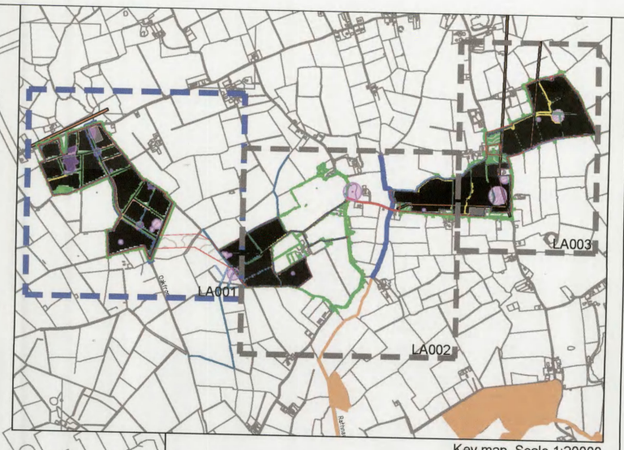
Grassland meadow Area to be managed for Whooper Swans

30.6m

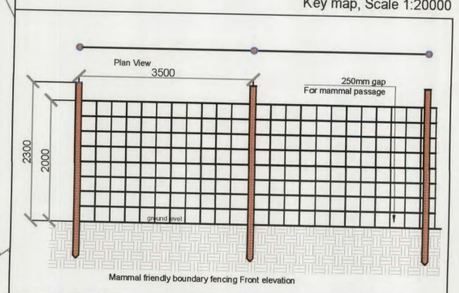
VP1
VP8

VP18

Cutline for drawing LA002



Key map, Scale 1:20000



Mammal friendly fence, Scale 1:50

Landscape key and biodiversity management recommendations for habitat enhancement:

- **Site boundary**
- **Archeological zones**
- **Existing mixed broadleaf conifer woodland (WD2) to be retained**
- **Existing scrub (WS1) area to be retained**
- **Mammal friendly fence,** along site boundary and watercourses See detail on LA001
- **Existing overhead lines**
- **CCTV poles and cameras**
- **Existing watercourses: Oakfront stream to the east and Rathnacally stream to the west, to be retained and protected.** 15m wide buffer along the margins to be protected and undisturbed with any work or machinery in order to protect aquatic insects.
- **Existing drainage ditch to be retained and protected.** Xm wide buffer along the margins to be protected and undisturbed with any work or machinery in order to protect aquatic insects.
- **SAC**
- **Proposed pollinator friendly Native wildflower meadow** composed with the following species: Birdsfoot Trefoil, Red Clover, Devil's Bit Scabious, Field Scabious, Lady's Bedstraw, Knapweed, Meadowsweet, Oxeye Daisy, Purple Loosestrife, Selfheal, Ragged Robin and Vetch at the rate of 1.50kgs/0.10Ha. (.25ac)
- **Grassland meadow area to be managed for Whooper Swans**
- **Grassland meadow** to be allowed to regenerate naturally from Improved Agricultural Grassland (GA1) No imported seed and with no use of fertilizers and maintained as "rested" regime, not being grazed or cut from April to July in order to allow the vegetation to grow. No trees to be planted in this area.
- **Grassland meadow** to be allowed to regenerate naturally from Arable crops (BC1) No imported seed and with no use of fertilizers and maintained maintained as "rested" regime, not being grazed or cut from April to July in order to allow the vegetation to grow. No trees to be planted in this area.
- **Existing treeline to be retained, protected and enhanced with supplementary planting as follows,** to be planted around and within the site, where there is gapsflack at treelines in order to establish a continuous dense screening of vegetation:
  Proposed Mix: Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Willow (*Salix spp.*), Blackthorn (*Prunus spinosa*), Scots pine (*Pinus sylvestris*) and Hawthorn (*Crataegus monogyna*) all planted Barerout, 8-10cmg, 2.4m high, feathered, see detail nr.1 on LA002
- **Existing Semi Mature Hedgerow to be supplementary planted as follows,** same specification to be planted around site boundary where there is gapsflack of hedgerow in order to establish a continuous dense screening of vegetation:
  Proposed Mix: Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*), Elm (*Ulmus spp.*), Holly (*Ilex aquifolium*), Gorse (*Ulex europaeus*) and Ivy (*Hedera helix*), all planted in double staggered rows, @800-1000mm high, BR, where possible, with spacing between rows from 300mm to 400mm.
- **Site access tracks**
- **Proposed temporary construction compound site,** to be allowed to regenerate into grassland meadow after works completed.

- BAB **Bat box.** Supply as per Biodiversity Management Plan recommendations. Place on pole or tree, minimum 4m from ground and clear beneath (no overhanging branches etc.) Total 5 Nr
- BB **Bird box.** Supply as per Biodiversity Management Plan recommendations. Along field boundaries affixed to mature trees and within the native fruit orchards. No maintenance shall be required. Total 5Nr
- PMB **Pine Marten Box.** Supply as per Biodiversity Management Plan recommendations. Place at height of 4m above ground on on timber posts with steps cut into the wood. Total 1 Nr.
- BOB **Barn owl box.** Supply as per Biodiversity Management Plan recommendations. Place on exposed trees or posts in area of open tussocky grassland minimum 4m wide in locations indicated in plan. Total 3Nr
- FNB **Frog/Newt box.** Supply as per Biodiversity Management Plan recommendations. Place adjacent to the stream and river bank in locations indicated in plan. Total 10Nr
- HB **Hedgehog box,** installed as per the Biodiversity Management Plan reccomendations. Place adjacent to dense vegetation (Hedgerows). Total 5 Nr.
- ES **Nature trail educational information sign.** Total 2Nr.
- CM **Corrugated metal sheets** for shrew habitat, Total 2 Nr.
- LB **Lizard berms** min. size 1.5m high by 2m long , Total 2 Nr.
- VP6 **Viewpoints,** for more detail and photomontages on views, refer to Solar development photomontage report document and to Glint and Glare study

THIS IS NOT FOR CONSTRUCTION

Cathal O'Meara
Landscape Architects
087 9202549
2 Mc Sweeney St,
Fermoy, Co. Cork

Chartered member of the Irish Landscape Institute

Client: Entrust

Project: Solar farm development at Ballynoran, Ballynadrideen, Ardnagheehy, Charleville, Co. Cork.

Drawing: Landscape Layout 1 of 3

Date: 09/10/2023

Drawn By: Luis Medeiros

Checked By: Cathal O'Meara

Issue: Planning

Dwg No: 2316_LA001_Rev01

cathal meara landscape architects

N

Scale 1:2000, @ A1

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

Planning Ref: 22/6901
(Please quote in all related correspondence)

15 June 2023

Director of Services – Planning
Cork County Council
County Hall,
Carrigrohane Road,
Cork
T12 R2NC

Via email: planninginfo@corkcoco.ie

Re: Notification under Article 28 (Part 4) or Article 82 (Part 8) of the Planning and Development Regulations, 2001, as amended.

Proposed Development: Permission to amend the design of the previously approved development (pl. ref. no 20/4041) which comprises consent for a solar PV energy development . The proposed amendments include: (1) increase in number of transformers, (2) increase in size of transformers, (3) reduction in the spacing of solar PV rows (strings), (4)increase in size of solar panels, (5) reduction in the number of solar panels, (6) increase in solar panel output, (7) change in solar panel tilt (degree), (8) reduction in height of solar array, (9) omission of development within the SAC and (10)operational period is proposed to be extended from 25 to 40 years at Ballyroe & Dromin, Ballyhea, Charleville, Co.Cork. A Natura Impact Statement will also be submitted to the planning authority for this proposed development.

A chara

I refer to correspondence received in connection with the above. Outlined below are heritage-related observations/recommendations co-ordinated by the Development Applications Unit under the stated headings.

Nature Conservation

Interconnected Solar Farms- Annagh Area

A number of largescale solar developments have been proposed or consented for the Annagh area which will interconnect to each other via a 33kv interconnector (planning ref. 22/5933). These projects adjacent and/or proximal to the proposed Ballyroe Solar farm amendment application include;

- Within 1km, the permitted but not built 67.8ha solar farm development at Fiddane (Pl. Ref 17/05799 & ABP-308846-20) and amendment application (Planning Ref. 226536) to the;

- The adjacent proposed 42.6h Coolcaum solar farm (Plannign ref. 225681)

Combined, all three solar farms will cover an area of 213.16ha. The proposed grid connection for all three solar farm projects (Coolcaum, Fiddane, Ballyroe) falls under one application and is currently in planning (Planning ref. 225933) and consists of; 2.378 km of 33kV underground cable and 0.985km of 33kV overhead line supported by 8 triple pole sets and 5 double pole sets.

Nature Conservation

The proposed Ballyroe Solar Farm amendment development (Planning Ref. 226901) lies directly adjacent to and is hydrologically connected to the Blackwater River candidate Special Area of Conservation (cSAC) (Site Code: 002170).The qualifying interests (QI) for the SAC are the following, amongst others, EU Habitats Directive Annex I/II habitats and species;

- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]

The proposed development lies directly adjacent to the Awbeg River tributary Rathnacally (Struhaneballiv Stream) which runs along the western boundary and is designated as part of the Blackwater River cSAC (Site Code: 002170), this tributary, and an extensive manmade drainage network located within and adjacent to the proposed development, flow into the main Awbeg River channel (also designated as Blackwater River cSAC). The main Awbeg River Channel along the southern boundary of the proposed Ballyroe Solar farm amendment development site. The Awbeg River and its tributaries are particularly important as a refuge for uninfected white-clawed crayfish, which up to recently have not recorded crayfish plague in its waters. This situation has changed recently with the Marine Institute recording eDNA traces of Crayfish plague in its water samples from the Awbeg. The White clawed crayfish may suffer local extinctions in parts, if not all, of the River Suir system, and some other rivers, due to crayfish plague. The Annex II protected species, Otter *Lutra lutra* also a QI for the Blackwater River cSAC occur within the receiving watercourses in and around the proposed development site.

The lands within the proposed Ballyroe solar farm are composed of Improved (GA1) and semi-improved agricultural grassland forming mosaics with Wet grassland (GS4) in places along the Awbeg Floodplain. Along with Perennial rye grass species other grass species present include Yorkshire fog, Meadow foxtail, Cocksfoot and Creeping bent. Meadow buttercup *Ranunculus acris* is frequent in the sward reflecting the moist conditions present. The biodiversity value of the grassland is enhanced by its location along the flood plain of the Awbeg and its tributaries with ponding and undulations which become water filled in the winter period or during periods of flooding. These freshwater ponds (FL4) are small to medium in size but support aquatic plant species such as *Potamogeton* spp. The red listed bird species (BOCCI, 2021), Snipe, was also frequently recorded in the flood plain habitat feeding within the grassland and on the margins of the ponds. A flock of eight Snipe were flushed on one occasion within the proposed Ballyroe development site which had been feeding on the margins of the pond adjacent to the Rathnacally stream. Snipe is red listed, being of high conservation concern due to declines in both its wintering and breeding populations (BOCCI, 2021). Semi-natural hedgerow habitat are present along the field boundaries. Aquatic and riparian habitat are also present within the development site including quarry ponds, tributaries of the Awbeg River, Struhaneballiv/Rathnacally stream and drainage ditches.

In addition to the Blackwater River cSAC the surrounding area also includes the following ecologically sensitive receptors;

(i) Kilcolman Bog Special Protection Area (SPA) (Site code: 004095) is located 7.6km to the south east, the qualifying interests of Kilcolman Bog are listed as Whooper

Swan (*Cygnus cygnus*), Teal (*Anas crecca*) and Shoveler (*Anas clypeata*) and Wetland and Waterbirds.

(ii) Ballyroe quarry pond c700m located within the proposed Ballyroe development site- an important night roost and refuge water body for the Annex I Whooper swan with counts of up to 173 Whooper swans using this as a night roost in 2023 (C.Deasy, NPWS, 2023).

(iii) Annagh Bogs within 500m to the northwest, a site of botanical and ornithological importance.

(iv) Ballyhea Quarry ponds c1.7km to the east which support wintering water birds, Otter have also been recorded here (NPWS, 2022).

(v) Awbeg flood plain and Blackwater Flats (Annagh South townland)- is an area of importance for wintering water birds including Lapwing, Wigeon, Teal and Annex I Whooper Swans. The flock of Whooper Swans which occur here are a site faithful flock of up to 177 Whoopers which forage and roost either directly adjacent to and proximal to the proposed Ballyroe amendment Solar Farm development.

Landuse in the area is primarily for agriculture together with commercial forestry, wind and solar developments, quarrying works and transport infrastructure (N20).

The area of the proposed development is important for the following species:

- White-clawed crayfish, listed on Annex II of the EU Habitats Directive (Council Directive 92/43/EEC) and a species protected under Section 23 of the Wildlife Acts, outside of designated sites.

- Whooper swan- a Special Conservation Interest (SCI) Species for the nearby Kilcolman Bog SPA (Site code: 004095) with connectivity to the proposed development site and a species listed on Annex I of the EU Birds Directive (Council Directive 2009/147/EC);

- Annex II Otter are known to be present in the area and are thought to breed along the River Awbeg;

- Bat species, which are strictly protected and listed in Annex IV of the EU Habitats Directive (Council Directive 92/43/EEC);
- Signs of Badger were evident within and adjacent to the proposed development site;

- Kestrel a red listed species of 'High conservation concern' (BoCCI, 2021) breed in the areaand has been recorded within the Ballyroe Site (NPWS Survey 2023).
- Barn Owl a red listed species of 'High conservation concern' (BoCCI, 2021) - historically recorded using derelict buildings in the townland of Annagh North.
- Snipe, a red listed species of high conservation concern (BoCCI, 2021) for both its breeding and wintering populations. Snipe have been recorded within the Ballyroe development site (NPWS 2023);
- Annex I kingfisher have been recorded in the watercourses in this area.

Annex I Whooper Swans

Whooper Swans are winter migrants to Ireland; generally arriving in October and leaving to return to their breeding grounds in late March/early April. The Whooper Swans that winter in Ireland breed in Iceland. The Irish Wetland Bird Survey (I-WeBS) office estimate that the national population of Whooper Swans wintering here is 15,370 birds (Crowe et al., 2015)[1]. Any site that regularly holds 1% of this figure (c.150 Whooper Swans) is considered to be of national importance for Whooper Swans. Any site containing 340 birds or more is considered to be of international importance (Lewis *et al.*, 2019). Based on survey work carried out by this Department over the winter of 2022/23[2] a number of fields within and directly adjacent to the proposed Ballyroe development site are known to support numbers of Whooper swans up to 177 individuals (NPWS, 2023) which exceeds the threshold for a site of national importance (150 birds). A Significant night roost site occurs also within the proposed development site at Ballyroe Quarry pond with a peak count of 173 Whooper Swans roosting at Ballyroe Quarry Pond in early March 2023 (NPWS Whooper Swan Survey, 2022/23). A further significant roost site at Annagh South is also located c 720m to the west of the proposed Ballyroe solar amendment development site. Whooper Swans usually feed during the daylight hours and leave the feeding sites at dusk to congregate at evening roosts (Owen *et al.* 1986 in Robinson *et al*, 2004).

Whooper Swan distribution and abundance- Awbeg Floodplain (Churchtown)

This Department conducted surveys of Whooper Swans along the Awbeg River floodplain (Churchtown)[3] and also at Kilcolman Bog SPA in the autumn/winter survey season with multiple monthly visits from October 2022 to April 2023. Whooper Swans were first recorded

[1] Crowe *et al.*, (2015) Whooper *Cygnus Cygnus* and Bewicks *Columbianus bewickii* Swans in Ireland: Results of the International Swan Census, January 2015. Irish Birds 10,151-158.
[2] Whooper Swan Survey 2022/23 (C.Deasy, Conservation Ranger, NPWS)
[3] Awbeg Floodpain (Churchtown area) consists of a network of townlands including Ballyroe, Annagh South, Annagh North, Annagh Bogs, Kilgrogan, Aghaburren, Caherconor, Mountbridget, Dromin, Coolcaum, Imphrick, Lisballyhea, Ballindillanig, Blackwater flats.

in the Awbeg floodplain (Churchtown area) on the 17th of October 2022 in the townland of Annagh South. Departure of Whooper Swans from the Awbeg floodplain (Churchtown area) occurred in early April with final sightings recorded on April 4th 2023. The Whooper Swan Counts increased in the period between February 20th and 27th in the Awbeg floodplain (Churchtown area) with up to 177 Whooper Swans recorded foraging and 173 Whooper swans recorded roosting in the Ballyroe Quarry site located within the proposed Ballyroe development site. These Whooper Swans were foraging in the townlands of Dromin, Ballyroe, Mountbridget and Annagh South coinciding with the abandonment by Whooper Swans of the Kilcolman Bog SPA which indicated that the Kilcolman herd of Whooper Swans had moved to the Awbeg floodplain (Churchtown area) to roost and forage for the remainder of the winter of 2023. The results of the NPWS survey show the fields and quarry within the proposed Ballyroe Solar Farm amendment application area are important foraging and night roost sites for the Whooper Swan with numbers of national importance roosting in the Ballyroe quarry. The proposed development therefore based on survey results in 2022/23 will result in the direct loss of foraging habitat for the Whooper Swan and potential for disturbance/displacement from the roost site at Ballyroe Quarry- (See Figure 1.0).

The NPWS Survey results 2022/23 recorded the main commuting corridor between the townlands of Ballyroe and Annagh South where regular Whooper Swan flight paths occur morning and evening is located within the proposed development site. Whooper Swans were recorded flying from the regularly used night roost at Ballyroe quarry to foraging grounds in the nearby Aghaburren, Dromin, Annagh South (Blackwater flats), Ballyroe and Caherconner townlands. This is an important and a well-used dedicated Whooper Swan flight path traversing over the proposed development site, it is an important transit route for the Whooper Swans (See Fig 1.0).

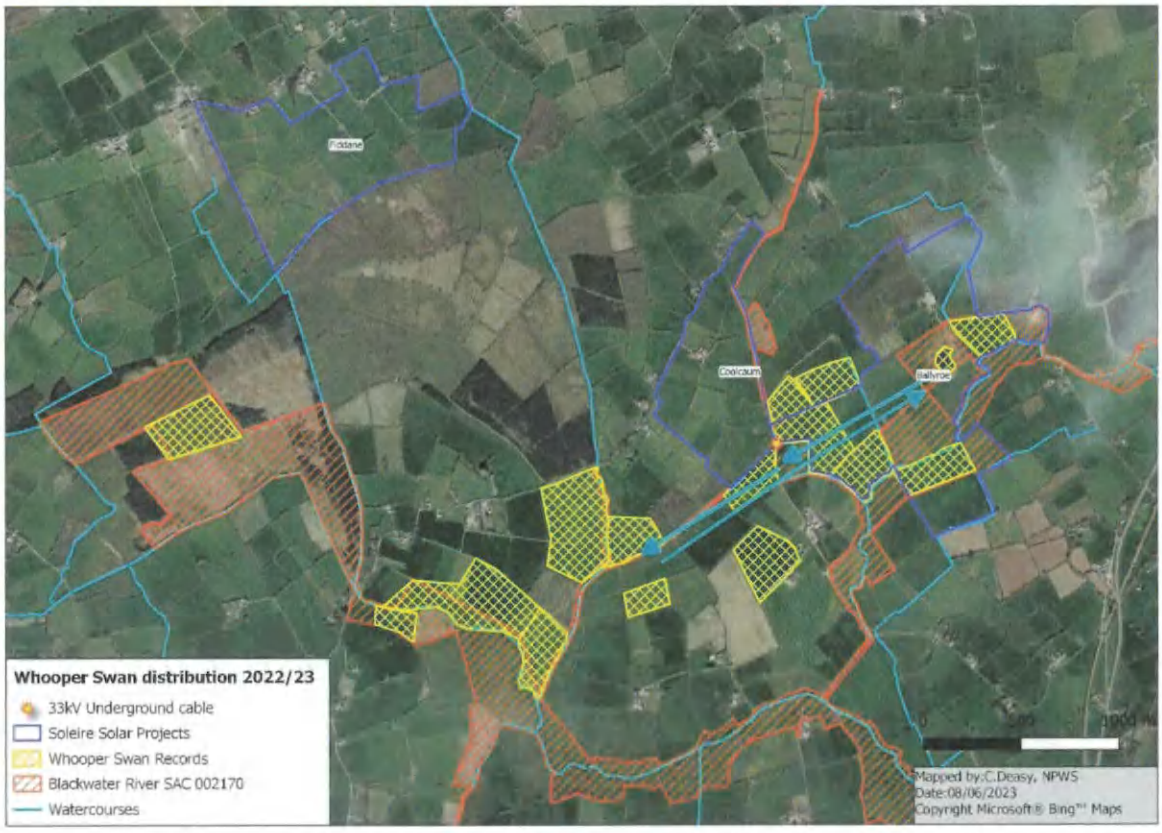


Figure 1.0 Fields adjacent to and in the surrounding area used by Annex I Whooper Swan (NPWS Surveys Autumn/Winter 2022_23). Flight paths are indicated by blue arrows. Night roosts are not displayed due to ecological sensitivity, locations can be provided on request.

Inadequate EcIA Assessment of potential impacts on Whooper Swans

Due to inadequate surveys and assessment of the potential impacts of the proposed development on the Annex I Whooper Swan, an RFI for the proposed development was issued by Cork County Council in February 2023 requesting further bird survey work on Whooper Swans which was then carried out during the Winter of 2022/23 by Ornithologist Barry O'Mahony (VEON, EcIA, Appendix 5, April 2023). The following extract Section 3.2.2 Fauna Results is from the updated Ecological Impact Assessment (EcIA) for the proposed development.

Whooper swan (*Cygnus cygnus*) surveys were completed by a third-party ornithologist Barry O'Mahony on behalf of Entrust in the surrounding area. These surveys were carried out from October 2022 until April 2023, at multiple locations in the vicinity of the proposed development site, other neighbouring proposed solar farms and at the Kilcolman Bog c. 7.8 km southeast of the proposed development site. These surveys found that low numbers of Whooper Swans were recorded infrequently at the various sites in October and November. During these months the highest number of Whooper swans recorded was 42 swans grazing and roosting at the Blackwater Flats. Peak Whooper swan activity in the vicinity of the proposed development occurred between December and March, according to the survey results. The results of the surveys are fully detailed in **Appendix 5**.

(Section 3.2.2 VEON EcIA, April 2023)

A similar section is provided in Section 3 of the Natura Impact Statement (NIS) (VEON, April 2023). While the NPWS survey data concurs with much of the Whooper Swan Survey Data (VEON EcIA, April 2023, Results Table Appendix 5), the Department's data from 2022/23 surveys of the area have records for Whooper swans foraging in additional fields within the proposed development site in the townland of Ballyroe (See Fig 1.0) which were not identified by the Applicant. Furthermore while the Appendix 5 Results Table (VEON EcIA, April 2023) provides an accurate picture of the Whooper Swan distribution and abundance and is similar to the findings of the NPWS survey data, the discussion and text sections of the VEON EcIA report fail to adequately reflect the field survey data table they have provided. The results section 3.2.2 (VEON EcIA, April 2023) and NIS Section 3.3 (VEON April 2023) describe the lower numbers (42 Whoopers) in the early season but fails to go on to fully describe the peak counts later in the season which are significant as they surpass the threshold for a site of National Importance (greater than 150 Whooper Swans, IWeBS). In Appendix 5 Section 5.1 of the EcIA a brief summary is provided of the Whooper Swan Survey 2022/23 carried out by Barry O'Mahony. Here again the peak numbers are not mentioned for example a peak roost count of 177 Whooper swans was recorded within the Ballyroe Quarry night roost[4] site according to Appendix 5 Results Table provided however this result does not appear anywhere in the text in Section 5.1. The text also describes how numbers of Whoopers counted do not meet the threshold for a nationally important population (150 Whooper Swans) however the table provided in Appendix 5 does show that this number was met (for example 177 Whooper swans counted on 18th March 2023, Appendix 5 Results Table) and therefore should be mentioned in the text as this is a significant count. This number is even more relevant as the Ballyroe Quarry night roost is located in the centre of the proposed Ballyroe Solar farm development site and is a regularly used night roost. Due to gaps and missing information in the NIS and EcIA it is impossible to rule out beyond reasonable scientific doubt adverse significant impact on the Whooper Swan a SCI of Kilcolman Bog SPA.

[4] Ballyroe quarry is labelled Ballyhae quarry in the Appendix 5 Results Table but named Ballyroe quarry elsewhere.

Matters relating to Appropriate Assessment

Kilcolman Bog SPA - Whooper Swans, Special Conservation Interest (SCI) species.

The Annex I Whooper Swan is a Special Conservation interest (SCI) species of the nearby Kilcolman Bog SPA (Site code: (004095) located 7.6km to the south east of the proposed development site. In the past 95 Whooper swans have been counted at Kilcolman Bog[5]. Numbers appear to have reduced in recent years, however Whooper Swan still occur on Kilcolman Bog (NPWS Whooper Swan Count, Winter 2022/23)[6] with up to 74 Whooper swans recorded foraging and up to 109 Whooper swans roosting at Kilcolman Bog in recent times (NPWS, 2023) with an average count at Kilcolman of c 40 Whooper swans. Recent IWEBS counts of Whoopers carried out at Kilcolman Bog range from 14 birds (2018/19) to 78 birds (2015/16) and with an average count of 39 birds. NPWS Whooper Swan surveys conducted monthly from October to April 2022/23 recorded Whooper swans foraging throughout the day at Kilcolman Bog and roosting at night on the lake. NPWS dusk surveys 2022/23 indicated that the Kilcolman Bog SPA is also used as a roost site for Whooper Swans who have foraged elsewhere during the day, Whooper Swans were recorded to fly in from the west at dusk to roost for the night at Kilcolman Bog SPA. The resident Kilcolman Whooper Swans were observed foraging throughout the day largely in fields to the south, south west and southeast of Kilcolman lake and move into the lake at dusk to roost for the night.

The NPWS Survey 2022/23 recorded the first sightings of Whooper Swans at Kilcolman Bog SPA on the 4th of November 2022. Departure of Whooper Swans from Kilcolman Bog SPA occurred quickly when all Whooper Swans abandoned the site between the 20th and 27th of February 2023. This is considered to have coincided with the release of a high density of dairy cows from their winter housing onto Whooper Swan foraging fields at Kilcolman during this same period. Whooper Swans were not recorded again at Kilcolman Bog SPA during the 2022/23 winter survey season. The Whooper Swan Counts also increased in the period between February 20th and 27th in the Awbeg floodplain (Churchtown area) in the townlands of Dromin, Ballyroe, Mountbridget and Annagh South with a seasonal high count of 177 Whoopers swans recorded foraging in the Awbeg floodplain (Churchtown area) on the 27th of February and 173 recorded roosting in Ballyroe Quarry pond on the 7th March 2023. Survey data suggests that the Kilcolman herd of Whooper Swans had moved to the Awbeg floodplain (Churchtown area) to roost and forage for the remainder of the winter/spring period of 2023 supplementing the numbers here.

[5] NPWS Site Synopsis- figures are mean peaks for the 5 year period 1995/96-1999/2000 numbers recorded.
[6] NPWS Conservation Ranger, C. Deasy Whooper Swan Surveys 2022/23

The Department considers there to be a potential for significant adverse impact upon not just foraging but also roosting Whooper Swans. Whooper swans have been shown via NPWS field work in 2022/23 to be foraging in significant numbers within the proposed Ballyroe development site. Whooper swans were also roosting in significant numbers (up to 173) within the proposed development site at Ballyroe quarry with a further significant roost c720m to the west at Annagh south/Blackwater Flats. There are also dedicated flight paths between these roost sites which fly over the proposed Ballyroe site (See Figure 1.0). Field surveys conducted by NPWS and by Barry O'Mahony, Ornithologist, in support of the current Ballyroe application and the proposed adjacent Coolcaum solar farm application (Planning Ref. 225681) concur in their findings that the Whooper Swan herd which forages and roosts in the Awbeg Floodplain (Churchtown area) can be composed of a combined herd – the Kilcolman Whooper Swan herd and the more local Awbeg Floodplain (Churchtown area) herd of Whooper Swans. This is described in the below Section 4 pp29 of the updated NIS (Delichon, April 2023, Coocaum Solar Farm).

> The Kilcolman Bog site, is a Special Protection Area (SPA) for birds, where Whooper Swan is a Special Conservation Interest species for this European Site. In addition to the Awbeg river floodplain south of the proposed solar farm site, Kilcolman Bog is the other area of sustained Whooper Swan activity within the survey area. This is located 7.8km south-east of the proposed Coolcaum solar farm site. Whooper Swan activity at Kilcolman Bog was primarily roosting, with regular evidence of grazing birds within nearby fields on February 09th and 20th 2023. Dedicated roost watches identified Whooper Swan approaching and landing within Kilcolman Bog on January 30th 2023, February 15th 2023 and February 20th 2023. No conclusive evidence was obtained in terms of Whooper Swan grazing and foraging along the Awbeg River floodplain to the south of the Coolcaum Solar Farm site, regularly migrating south / south-east to Kilcolman Bog to roost or leaving the Kilcolman Bog to graze or roost within the Awbeg River floodplain. Nonetheless, the survey findings suggest that Whooper Swans identified nearby Coolcaum and those at Kilcolman may comprise one Whooper Swan herd. Although direct evidence of movements between the two areas were not witnessed during the surveys completed between October 2022 and April 2023, the cumulative numbers of birds using the various survey sites in Churchtown and Kilcolman support the one-herd concept using both the Churchtown and Kilcolman areas.
>
> The Whooper Swan survey report is presented in full in **Appendix D**.

The field survey work indicates an ex-situ connectivity with the SCI of Kilcolman Bog SPA, the Whooper Swan and therefore the potential for a significant adverse impact from the proposed development on the Annex I Whooper Swan of Kilcolman Bog SPA cannot be ruled out.

Inadequate Appropriate Assessment

The NIS (VEON, April 2023) for the proposed development has "screened in" Kilcolman Bog SPA for Appropriate Assessment (AA) due to the potential for significant adverse impacts on the Annex I Whooper Swan, a SCI of Kilcolman Bog SPA (See below abstract, Section 4.4.2, VEON NIS, April 2023).

> However, Whooper Swan (*Cygnus cygnus*) listed as Special Conservation Interests for this SPA winters not only within the SPA site, but also within surrounding farmlands. Given the uncertainty concerning the possible movements of wintering whooper swans to and from Kilcolman Bog SPA, potential impacts of the proposed development must be considered.
>
> In addition, based on both recent and past survey work conducted by the National Parks and Wildlife Service (NPWS) and others, the fields within and adjacent to the proposed Ballyroe Solar development have been identified as important feeding and roosting sites for the Annex I species Whooper Swan, a species of Special Conservation Interest (SCI) of the nearby Kilcolman Bog SPA.
>
> Therefore, whooper swan may be affected by the proposed development.
>
> Based on this rationale, Kilcolman Bog SAC (004095) has been screened-in for potential impacts.

Section 4.4.2 VEON NIS, April 2023

The Department agrees with the approach of the NIS (VEON, April 2023) in "screening in" Kilcolman Bog SPA and the SCI Whooper Swan for AA (See NIS section 4.4.2 above) however the NIS does not adequately assess the results of the Whooper Swan Survey 2022/23 carried out by Barry O' Mahoney. The NIS results section fails to discuss and reflect the peak counts identified by their own ornithologist and the significance of these counts (numbers of national importance).

The NIS identified a number of potential impacts on the SCI of Kilcolman Bog SPA, the Whooper Swan including;

(i) Disturbance during the lifecycle of the project- construction, operational and decommissioning phases;

(ii) Displacement due to loss of foraging and/or wintering habitat

(iii) Collision Risk from solar infrastructure

(iv) Barrier effect

The Mitigation section however fails to provide adequate detail on proposed mitigation measures and when mitigation is referred to it is in generalised terms, it is not supported by evidence based information or peer reviewed publications as to its efficacy and is unclear how it will be implemented.

[A038] Whooper Swan *(Cygnus cygnus)* EU Birds Directive: Annex I Bern Convention: Annex II Birds of Conservation Concern: Amber	Potential for petrochemical and indirect impacts on whopper swans as a result of the proposed operations. Whooper Swans have been recorded within the vicinity of the Project area. Therefore, there is potential for impacts.	**Precautionary Measures**: Water quality measures including silt and sediment control and control of use of fertilisers, chemicals. Any works near watercourses to be carried out in dry weather to prevent siltation and run off. White borders to be applied to the solar panels, to avoid the "lake effect".

Table from NIS Section 5.6 Potential adverse effects and proposed mitigation

In the above table the potential for adverse impact is identified however proposed measures to mitigate are the application of White borders and water quality measures. No other mitigation is provided.

Disturbance Displacement impact and Whooper Swan mitigation habitat

For the potential impact of disturbance displacement and loss of foraging habitat to the Whooper Swan, the habitat loss is not quantified. No figure is provided as to the number of hectares of foraging habitat lost as a result of the proposed Ballyroe solar development despite the fact that solar panels are to be located on habitat where Whooper swans have been recorded feeding. The mitigation proposed is for nearby lands to be managed for the Whooper Swan, however again the amount of mitigation habitat to be provided is not quantified and therefore there is insufficient information provided to conclude in quantitative terms whether there will be a "like for like" replacement for potential foraging habitat loss as a result of the proposed development. Critically, the lands identified in Dromin are already used by the Whooper Swan, in fact these fields are some of the most preferred foraging fields that the Whooper Swans use with counts of 88 and 130 Whoopers feeding at Dromin (NPWS Survey, 2022/23). This is not additional habitat for the Whooper swan to mitigate for loss of foraging habitat and it cannot be said therefore that there will be "no net loss" of Whooper Swan foraging habitat as a result of the proposed development.

Based on both recent and past survey work conducted by the National Parks and Wildlife Service (NPWS) and others, the fields within and adjacent to the proposed Ballyroe Solar development have been identified as important feeding and roosting sites for the Annex I species Whooper Swan, a species of Special Conservation Interest (SCI) of the nearby Kilcolman Bog SPA. As such as part of the development design a proposed significant Whooper Swan Habitat in the Dromin townland south of the Awbeg River is to be maintained to offset any loss of grazing habitat for Whooper Swan (See the prepared Biodiversity Management Plan). Based on the historical and recent Whooper Swan surveys the proposal does not have any impact on Whooper Swans, their foraging areas or flight paths.

Section 5.5.4 VEON NIS

Construction Phase impacts on Whooper Swan

The NIS identified a potential impact from disturbance and displacement as a result of the construction works associated with the proposed Ballyroe development (See NIS Section 5.5.4 below)

Species such as Whooper Swan may be affected by the introduction of the associated infrastructure. This would have the greatest impact if the proposed works occurred during the wintering season (October to April). The proposed works during the construction phase are anticipated to generate relatively low levels of noise and only during permitted construction hours. In addition, no night works are anticipated. This will prevent significant disturbance or displacement effects to Whooper Swan as a result of the proposed development. Whooper swan can be affected indirectly through changes of its habitat through land use changes, in addition although considered slight there is potential for collision with associated infrastructure, and barrier to dispersal during the operational phase.

Section 5.5.4, VEON NIS, April 2023

Section 5.5.4 acknowledges that construction works "*would have the greatest impact if the proposed works occurred during the wintering season (October to April)*". However it is not clear from the NIS what mitigation is proposed for this potential impact. No clarity is provided in the mitigation section of the NIS to confirm if construction works will cease during the period when Whooper Swans will be present onsite (October to mid-April inclusive). This is a key piece of information as up to 173 Whooper Swans have been recorded roosting within the proposed Ballyroe development site and counts of up to 130 Whoopers swans have been recorded foraging within the proposed Ballyroe development site.

There is a lack of clarity on mitigation of the potential impact of disturbance displacement during construction to key Whooper Swan foraging and roosting sites in relation to the timing of construction works in the NIS therefore it cannot be concluded beyond reasonable scientific doubt that there will be no significant adverse impact upon the Whooper Swan, a SCI for Kilcolman Bog SPA during the construction or decommissioning phase.

Based on a review of the NIS (VEON, April 2023) as currently provided in which gaps and lacunae have been identified in its assessment of the field data, the potential impacts

identified and the mitigation proposed, it cannot be concluded beyond reasonable scientific doubt that there will not be adverse impacts upon the Kilcoman Bog SCI, the Whooper Swan.

Biodiversity Management Plan and Landscaping Plan

Wildflower Planting

It is noted that the Biodiversity Management Plan (BMP) and Landscaping Plan includes planting of wildflowers. The All-Ireland Pollinator Plan 2021-2025 advises against planting wildflowers outside a garden setting. The planting of wildflowers is harmful to existing wildflower biodiversity at this highly sensitive site and must not be carried out.

To clarify, the following points are taken from the Position Paper by the Dublin Naturalists' Field Club entitled '*The case against 'Wildflower' seed mixtures'* which is endorsed by the All-Ireland Pollinator Plan and reproduced on their website[7].

- Seeds of non-local origin – even if the species are native – introduce new genetic strains which may displace or compromise the local, naturally-occurring flora.

- Local, native species do not need to be sown. Native plants colonise suitable habitats by natural means.

- Seeds which are commercially produced and deliberately sown cannot, by definition, be wild and introducing them to the natural environmental does not contribute to addressing biodiversity loss.

- The genetic integrity of what remains of our rare and ecologically significant native species is, therefore, threatened by the introduction of seed from external sources.
- Pollen from these geographical insertions and intrusions cannot be prevented from fertilising the local native stock of the same species or causing hybridisation with other closely related species.

For the above reasons, the Department strongly advises against the planting of wildflowers.

Whooper Swan Mitigation Habitat

The BMP also references Annex I Whooper Swan but does not provide quantified enhancement measures for this species for which there are potential significant adverse impacts identified in the form of ex-situ disturbance of the Whooper Swans a SCI of Kilcolman

[7] https://pollinators.ie/wildflower-seed/how-the-aipp-is-trying-to-address-this-issue/

Bog SPA. It is unclear that there will be no net loss of foraging habitat or roost sites for the Whooper Swan as a result of the proposed development.

Access trails, infrastructure

The BMP proposes to install infrastructure such as access trails and bird hides at the proposed development site so that members of the public in the locality and wider area can access the site to view wildlife. The potential for disturbance impacts from the construction and operational phase of the access trails and bird hides has not been assessed fully as part of the proposed development. Sufficient detail relating to this infrastructure is not included in the EcIA or NIS therefore it cannot be concluded that there is no potential for adverse impact on Natura 2000 sites from these proposals until adequately assessed.

Tree and Hedgerow Planting

While reinforcement and enhancement of hedgerow habitat is listed as an action in the Biodiversity Management Plan (BMP) there is no detail as to the amount or location of trees/hedgerow to be planted.

Drain and Watercourse Management

The Rathnacally stream and Awbeg River run along the boundary of the proposed Ballyroe Solar farm, these watercourses form part of the Blackwater River cSAC and the nearby drainage channels are hydrologically connected to the Blackwater River cSAC. Management and clearance of drains and watercourses may have potential impacts on the conservation objectives of the River Blackwater cSAC. Riparian trees and habitats including deadwood within the rivers are an integral part of the structure and functioning of the river system, they aid in the settlement of fine suspended material, protect banks from erosion, contribute to nutrient cycling to the aquatic food web (e.g. allochthonous matter such as leaf fall) and reduce thermal stress to aquatic fauna such as Freshwater Pearl mussel and Salmonids. Riparian inputs provide habitat (refuge and resources) for certain life-stages of fish, birds, aquatic invertebrates and mammals including the Annex II species Otter a qualifying interest of the River Blackwater SAC. Management and maintenance of the riparian habitat has the potential to negatively impact upon the natural processes. The Department have concerns in regards to watercourse management as based on the information provided it cannot be demonstrated beyond reasonable scientific doubt these actions over the lifetime of the project will not result in significant adverse impact on the habitats or species of the River Blackwater cSAC.

Conservation Considerations

In summary the following is noted:

(1) **Whooper Swan** –

a. While a dedicated Winter 2022/23 Whooper Swan Survey was conducted by the Applicant, this is only one year of survey work, best practice according to SNH (2017) is for a minimum of 2 survey years.

b. The Whooper Swan is a species of Special Conservation Interest (SCI) for Kilcolman Bog SPA which is located c 7.6km to the south east of the proposed development. The NIS has acknowledged that with increased survey effort conducted in winter of 2022/23, Whooper Swans from Kilcolman SPA can intermix with the Awbeg flood plain (Churchtown area) herd of Whooper swans with both herds using the area for foraging and roosting. Therefore there is potential for significant adverse impact based on ex-situ connectivity with Whooper swans from Kilcoman Bog SPA. The Whooper Swan foraging areas are located within the proposed Ballyroe solar farm and there are significant roosting areas located within the centre of the development site (Ballyroe quarry pond) and 720m to the west (Annagh South/Blackwater flats) of the proposed development. Whooper swan flight paths overpass the proposed development site at least twice daily when Whooper swans are moving between their roosting sites to and from foraging grounds in Blackwater Flats, Dromin, Caherconnor, Annagh South and the wider Awbeg flood plain (Churchtown) area. Furthermore, when disturbed Whooper Swans were also recorded using Ballyroe Quarry pond as a refuge during the day time. Flying into it for a short period after being disturbed before flying back to forage in the fields once the disturbance threat was deemed to be reduced.

c. There is a paucity of research and scientific peer reviewed data on the impacts of solar developments on avifauna (Natural England, 2017)[8]. A study by Pierce-Higgins *et al.*, (2009)[9] suggested that wind farm developments may result in significant reductions in habitat usage from 100 to 800m from the turbines after construction, depending on the species. This could result in reductions in the abundance of some breeding birds by up to 50% within

[8] **Evidence review of the impact of solar farms on birds, bats and general ecology (NEER012) (Natural England 2017)** https://publications.naturalengland.org.uk/category/34022

[9] Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. and Bullman, R. (2009), The distribution of breeding birds around upland wind farms. Journal of Applied Ecology, 46: 1323-1331. https://besjournals.onlinelibrary.wiley.com/doi/10.1111/j.1365-2664.2009.01715.x

500m of the turbines (Pearce-Higgins *et al.* 2009b). In the absence of scientific data on the impacts of solar developments on avifauna other peer reviewed research is used as an indicator of potential adverse impacts such as the impact of disturbance displacement as has been demonstrated by Pierce-Higgins *et al.*, (2009) for onshore wind turbines.

d. In this regard a precautionary approach should be applied to the proposed development to avoid significant adverse impact upon the Whooper Swan, a SCI of Kilcolman Bog SPA and generally to the Annex I Whooper Swan in the area. Mitigation by avoidance is the preferred approach for the following reasons:
    i. 1 year of survey data contrary to the recommended best practice of 2 years (SNH, 2017) and insufficient evidence and uncertainty pertaining to the distribution and abundance of Whooper Swan as a result of this;
    ii. Direct loss of foraging habitat to the Whooper Swan is a potential impact identified however magnitude of the impact is inadequately described in terms of the quantification of the habitat loss. Furthermore the mitigation habitat as described in the BMP to be provided is already habitat that is a preferred foraging area for the Whooper Swans and therefore it cannot be concluded based on the mitigation provided that there will be no net loss of foraging habitat for the Whooper Swan as a result of the proposed development.

    iii. Applying the precautionary principle there is uncertainty and lack of evidence as to whether Whooper Swan will not be displaced/disturbed from foraging areas due to the development of new infrastructure directly adjacent to these foraging areas at Ballyroe as a result of the proposed development and other nearby proposed solar projects e.g. the adjacent 42.6 ha Coolcaum Solar Farm (Ref. 20/5681);

    iv. Collision risk from Solar farm fencing (2.0m high deer fencing with CCTV Cameras on 2.8m high poles every 35m) and other solar infrastructure- the development site boundary is directly adjacent to regularly used foraging grounds and Whooper Swans fly between fields and to roosting areas in this area which may increase the collision risk. Based on the information provided and the current

design of the development it cannot be concluded beyond reasonable scientific doubt that there is no collision risk to Whooper Swans.

e. It appears from the EcIA and the NIS that construction work will be going ahead during the sensitive period when Whooper Swans will be present (October to April), no clarity is provided that construction is to cease during this period. This has potential for a significant adverse impact on foraging and roosting Annex I Whooper Swan, a SCI of Kilcolman Bog SPA. All construction work and activity associated with the development including site investigations, foot and vehicle trafficking should be avoided in the period spanning October to mid-April (inclusive) within the area south of the public road L5528 to avoid the impacts of direct disturbance and displacement to Whooper Swans.

(2) **Cumulative Assessment-**

Based on a review of the NIS and EcIA for the proposed development and given the number of renewable developments within close proximity to each other and other proposed developments in the vicinity (M20 road network) it cannot be concluded beyond reasonable scientific doubt that there will be no adverse impacts on Natura 2000 sites from the proposed Ballyroe development in combination with other developments in the surrounding area.

The NIS states that as each of the individual proposed developments have proposed robust mitigation measures to ensure no adverse impacts could occur individually (though principally for watercourses) it is therefore not considered that there could be resulting cumulative effects following the mitigation measures being implemented for each individual projects. However, as the NIS itself notes, in-combination effects can occur where a project results in individually insignificant effects that, when considered in combination with impacts of other proposed or permitted projects or plans, can result in significant effects.

An Appropriate Assessment carried out under Article 6(3) of the Habitats Directive has often been compared, both from procedural and content points of view, with environmental impact assessment and strategic impact assessment under the EIA and SEA Directives. In spite of the major legal differences between these two types of assessments, there are a number of common principles, as has been reflected in the Court rulings, which highlight the interfaces among these EU environmental law regulations. Including, based on the Directive 85/337/ECC (EIA Directive), on the splitting of projects and cumulative effects.

Soleire Renewable SPV Limited currently alone have four separate active, and connected, planning applications due for decision either on the 15/6/23 or the 20/6/23. As an example of issues that can arise through project splitting it should be noted by the Council that otter use throughout the area and a footprint at the western boundary stream at Coolcaum has been noted in the NIS for this project. However in the NIS for the Coolcaum Solar Farm planning application (also Soleire Renewable SPV Limited, planning ref 225681, decision date 20/6/23) the same stream forms the eastern boundary of the site and no otter sign was found with it stated in the NIS that it was highly unlikely to be used by otters.

(3) **Blackwater River SAC-**

There is evidence to suggest aquatic invertebrates are attracted to horizontally polarised light as reflected from solar panels and use this as a stimulus to induce egg-laying. This may cause mortality and reproductive failure. White gridding and anti-reflective coatings have been found to reduce attraction to some species of aquatic invertebrates and suggested that anti-reflective coatings (ARC's) reduce the amount of polarised light pollution (PPL), and thereby attractiveness to aquatic insects. Though white gridding is proposed the NIS does not appear to address anti-reflective coatings and whether anti-reflective films are incorporated.

In terms of overall potential water quality effects from the Project Cork County Council should satisfy themselves that the proposed mitigation regarding same is sufficient to avoid adverse impacts on the River Blackwater SAC through disturbance, sedimentation or other pollution. This is especially critical considering the location of the project within and adjacent to the SAC itself, the occurrence of qualifying interest species at the site, the presence of hydrologically linked watercourses and drainage ditches throughout the site, the presence of the floodplain of the Awbeg etc.

You are requested to send further communications to this Department's Development Applications Unit (DAU) at referrals@housing.gov.ie where used, or to the following address:

The Manager
Development Applications Unit (DAU)
Government Offices
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Edel Griffin
Development Applications Unit
Administration