



An
Bord
Pleanála

Inspector's Report

ABP-321285-24

Development

Construction of 7 wind turbines, meteorological mast, temporary construction facilities and all associated site works. 10-year permission for wind farm. A Natura Impact Statement and Environmental Impact Assessment Report accompany this application.

Location

In the townlands of Kilbane, Killeagy (Ryan), Shannaknock, Killeagy (Stritch), Killeagy (Goonan), Ballymoloney, Magherareagh and Lackareagh Beg, Co. Clare.

Planning Authority

Clare County Council

Planning Authority Reg. Ref.

2460411

Applicant(s)

EDF Renewables Ireland Limited

Type of Application

Wind Energy

Planning Authority Decision

Refuse Permission

Type of Appeal	First Party
Appellant(s)	EDF Renewables Ireland Limited.
Observer(s)	Michael Ryan Seán Conway Engineering Ltd Deirdre Boland Brendan Sweeney Anne-Marie Boland Paraic Boland Mary Ryan Orlaith Nihill Parice McAuliffe Chris Weldon Ivan O'Connell Willie Wixted Mike Sweeney James Skeehan Philip and Aileen Horan Michael and Josephine Lovett Shane O'Connell John Ryan Ute and Konrad Rumberger
Date of Site Inspection	6 th & 7 th March 2025.
Inspector	Paul Kelly

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Appendix 1 – Stage 1 Appropriate Assessment (AA) Screening

Appendix 2 – Stage 2 Appropriate Assessment

1.0 Introduction

- 1.1. Under the provisions of Section 37 of the Planning and Development Act, 2000, as amended (“PDA 2000”), the appellant, EDF Renewables Ireland Limited (“the appellant”) has appealed the decision of Clare County Council (“CCC”) to refuse planning permission for three reasons for a wind farm development and associated works in the townlands of Kilbane, Killeagy (Ryan), Shannaknock, Kileagy (Stritch), Killeagy (Goonan), Ballymoloney, Magheragh and Lackareagh Beg, Co. Clare.

There are 19no. observers to this appeal.

A timeline of the planning application to date is summarised as follows:

Table 1: Timeline of Planning Application		Date:
i.	Planning application lodged to CCC	29/08/2024
ii.	Decision of CCC	23/10/2024
iii.	Appeal received	19/11/2024
iv.	Response to Appeal by CCC	16/12/2024

- 1.2. The site of the proposed development is located within areas considered to be ‘Open to Consideration’ for wind energy development as defined in Volume 6 of the Clare Wind Energy Strategy (“CWES”) of the Clare County Development Plan, 2023-2029 (“CCDP”).
- 1.3. The proposed grid connection (“GCR”) is the subject of a separate planning application but is the subject of assessment in the EIAR and NIS.
- 1.4. **ABP-318846-24** refers to a grant of permission for a temporary period of 5-years for a 100m high lattice type meteorological mast on the subject site.
- 1.5. The applicant held a design flexibility meeting with Clare County Council under Section 34H of the Planning and Development Act, 2000 (as amended) on 28th March 2024. A Design Flexibility opinion issued by CCC on 22nd April 2024 accompanies the application. The application has been brought forward on the basis of a range of turbine parameters and three different turbine scenarios are addressed in the EIAR. These are described in Table 1-3 of EIAR Chapter 1 as follows:

- Scenario 1 (Maximum) – Tip Height: 180m, Rotor Diameter: 155m and Hub Height: 102.5m
 - Scenario 2 (Minimum) – Tip Height: 179.5m, Rotor Diameter: 149m and Hub Height: 105m
 - Scenario 3 (Median) – Tip Height: 180m, Rotor Diameter: 150m and Hub Height: 105m.
- 1.6. The turbines have a power range of 4-7MW and for the purposes of the EIAR a 6.6MW rated output per turbine is assumed, with an estimated installed capacity of 46.2MW. The Board should note that when granting permission in respect of a planning application including design flexibility, a condition must be attached setting out the approved parameters and requiring the applicant to confirm the actual detail of the development to which any such condition relates prior to the commencement of that part of the development. Circular Letter PL 11/2023 refers.
- 1.7. The Board should note the other wind farms proposed and permitted within the wider area of the site as detailed in Table A of this report and primarily consisting of the permitted Fahy Beg (**317227**) and Carrownagowan (**308799**) Windfarms and the proposed Ballycar (**318943**), Oatfield (**318782**) and Knockshavno (**320705**) Windfarms.

2.0 Site Location and Description

- 2.1. The 292ha project site (as delineated by the EIAR boundary) lies within the rural area of County Clare. The permanent footprint of the project measures approx. 8.4ha.
- 2.2. The proposed wind farm site lies 9km northwest of the M7 and 15km north of Limerick City. It is primarily accessed by the R466 and the local road network and is situated 5km east of Broadford, 4km north of Bridgetown and 6km west of Killaloe. The closest settlement is the small village of Kilbane and the site boundary begins approx. 200m northeast of the village on the L7080. The landform of the proposed windfarm site is undulating and relatively steep upland terrain comprising the ridgetops of Glengalliagh Mountain and Lackareagh Mountain within the Slieve Bernagh Range in east Clare and within the spatial enclosure of the Glenomra Valley. The windfarm site is divided into two areas, with one lying to the north of the L7080 'Gap Road' and the other to the south of this local road, providing the

'northern' and 'southern' clusters. T01 and T02 are situated on the eastern flank of Glengalliagh Mountain in the northern portion of the site within low-intensity agricultural lands and at mid-elevations relative to the Glenomra Valley Floor. The remaining 5no. turbines are situated at higher elevations with T03, T04 & T05 spanning the eastern side of the ridge between Glengalliagh Mountain and Lackareagh Mountain and within coniferous forestry. T06 and T07 sit below the western ridge in low intensity agricultural lands. Current land use primarily consists of coniferous forestry and agriculture.

- 2.3. An onsite 38kV substation is proposed within a compound which measures 4,180m². This will include a control building, with a floor area of 127.5m² and a ridge height of 6m, welfare facilities and palisade fencing. A BESS adjoins the substation and primarily consists of 6no. steel containers. This infrastructure is centrally located within the windfarm site in a saddle between Glengalliagh and Lackareagh Mt. and is also accessed via the L7080 Gap Road.
- 2.4. The proposed Grid Connection Route includes for an underground 38kV cable from the proposed onsite substation to the existing Ardnacrusha 110kV over a distance of 14.7km to the south. The route is primarily located within the public road corridor of the L3022-8, R466 and L3056 roads and is primarily characterised by agricultural lands before coming into proximity with residential receptors near Ardnacrusha.

3.0 Proposed Development

- 3.1. A 10-year planning permission is sought to construct a windfarm with a 35-year operational life from the date of commissioning in the townlands of Kilbane, Killeagy (Ryan), Shannaknock, Killeagy (Stritch), Killeagy (Goonan), Ballymoloney, Magherareagh and Lackareagh Beg, Co. Clare. The proposed windfarm will consist of the following:
 - Construction of 7 no. wind turbines with a blade tip height range of 179.5m to 180m, a rotor diameter range of 149m to 155m, and a hub height range of 102.5m to 105m;

- Construction of associated foundations, hardstand and assembly areas. The development will have a total physical footprint of 8.4ha.
- Erection of 1 no. permanent meteorological mast of c. 36.5m in height, associated foundation and hard standing area in the townland of Shannaknock;
- Construction of 1 no. permanent 38kV electrical substation including a single storey control building with welfare facilities, all associated electrical plant and equipment, security fencing, entrance on to new access road, all associated internal underground cabling, drainage infrastructure, wastewater holding tank, retention separator tank and all ancillary works; in the townland of Killeagy (Goonan);
- A Battery Energy Storage System within the 38kV electrical substation;
- All associated windfarm underground electrical and communications cabling connecting the turbines and mast to the proposed electrical substation;
- Permanent upgrade of 1 no. existing site entrance off the L7080 ('The Gap Road') for the provision of construction and operational access;
- 3 no. new permanent site entrances off the L7080 for the provision of construction and operational access;
- Provision of 3 no. new temporary site entrances off the L7080 for the provision of construction access;
- Upgrade of existing tracks/roads, including the L7080, and the provision of new site access roads, 4 no. watercourse crossings, junctions and hardstand areas;
- 1 no. temporary construction compound with temporary offices and staff facilities in the townland of Killeagy (Goonan);
- 1 no. temporary storage area in the townland of Killeagy (Goonan);
- 1 no. borrow pit in the townland of Killeagy (Goonan);
- Tree Felling to accommodate the construction and operation of the proposed development;
- Peat and Spoil Management;

- Operational Stage site and amenity signage;
- All ancillary apparatus and site development works above and below ground, including soft and hard landscaping and drainage infrastructure.
- The estimated Export Capacity (MEC) of the development is expected to be 46.2 MW.

Once commenced it is expected that the overall construction phase will take approximately 18-24 months.

An Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS) have been prepared for the proposed development.

3.2. The following documents were submitted to CCC in the first instance in support of the proposed development:

- Public Notices
- Cover Letter
- Landowner letters of consent
- Planning Report
- Environmental Impact Assessment Report (EIAR)
- Natura Impact Statement (NIS)
- Planning Drawing Pack

4.0 Planning Authority Decision

4.1. Decision

4.2. The Planning Authority ("PA") decided by Chief Executive Order dated 23rd October 2024 to refuse permission for the above-described development for three reasons which can be summarised as follows:

1. The proposed development is located in the Slieve Bernagh Bog Landscape Character Area (LCA) and in an area where wind farm developments are 'Open to Consideration' on a case by case basis subject to viable wind speeds, environmental

resources and constraints, and cumulative impacts in accordance with Objective WES10 of the Clare Wind Energy Strategy. Having regard to the location of the site in a more sensitive and scenic area of the LCA (Lackereagh and Glenvagalliagh Mountains) it was considered that the proposed turbines by reason of their height (up to 180m), scale and siting on open, exposed and sensitive upland landscape would constitute a prominent feature from local and long range views and would seriously injure the amenities of the area including negatively impacting on the R466 Regional Road which is a designated scenic road. Having regard to the foregoing and the significant potential for cumulative impacts arising with permitted and proposed wind farm development in the surrounding area it was considered that the proposed development would contravene objectives CDP 14.2 and 14.7 of the Clare County Development Plan, 2023-2029 ("CCDP") and would be contrary to the proper planning and development of the area.

2. The Planning Authority ("PA") noted hydrological connectivity between the proposed development site and the Lower River Shannon SAC, the River Shannon SPA and the River Fergus Estuaries SPA and that the majority of habitats and species for which the European sites are designated are water-dependent with requirements for high to pristine water quality. Having regard to the particulars submitted, particularly the peat and spoil management proposals, surface water management plans and the WFD Assessment, the PA was unable to conclude beyond reasonable scientific doubt in the Appropriate Assessment process, that the proposed development would not adversely affect the integrity of downstream European sites. The proposed development was therefore considered to be contrary to Objective CDP15.3 of the CCDP and contrary to the proper planning and development of the area.
3. It is an Objective of the CCDP (15.12) to (inter alia) promote the conservation of biodiversity through the protection of sites of biodiversity importance and wildlife corridors, both within and between a designated site and the wider plan area. Having regard to the importance of the area for multiple bird species, as evidenced by survey results submitted, and in the absence of a strategic level cumulative assessment of the impact of the construction of a large number of turbines within one geographical area (66 turbines proposed or permitted) the PA cannot

satisfactorily determine that the proposed development will not give rise to, or contribute to, significant or adverse effects on either the special conservation interests of SPA's in the zone of influence of the proposed development, birds of conservation concern or on the Red List. It was considered that the proposed development would significantly diminish the biodiversity value of the area, would be contrary to Objective CDP15.12 of the CCDP and would be contrary to the proper planning and sustainable development of the area.

4.3. Planning Authority Report(s)

- 4.4. The planning report of the Executive Planner dated 22/10/2024 notes the applicable policy context with specific reference to the National Planning Framework, National Development Plan, Climate Action Plan 2024, Wind Energy Development Guidelines (DHPLG 2006), Draft Revised Wind Energy Development Guidelines (DHPLG 2019), Regional Spatial & Economic Strategy for the Southern Region and the Clare County Development Plan, 2023-2029.
- 4.5. The report also notes the relevant planning history, the technical reports of the local authority, submissions received from prescribed bodies and the observations of third parties. The report proceeds to carry out a substantive assessment, primarily structured around the following main headings: 'Natura Impact Statement', 'Environmental Impact Assessment' and 'Assessment', and which can be summarised as follows:

4.6. Natura Impact Statement

4.7. Screening for Appropriate Assessment

The report states that the PA, as competent authority, undertook Screening for Appropriate Assessment ("AA") in respect of the proposed development and was unable to reach a determination that the proposed development will not have a significant effect on European Site's, namely: The Lower Shannon SAC, Slieve Bernagh Bog SAC, and the River Shannon and River Fergus Estuaries SPA. This AA Screening Report and Determination is appended to the end of the planning report and also dated 22/10/2024.

The report noted and accepted that the applicant screened out Slieve Bernagh Bog SAC on the basis that there was no potential for direct or indirect effects and additionally screened in Lough Derg (Shannon) SPA on the basis that the site is within the core foraging range for Cormorant. Notwithstanding that the applicant also screened in Glenmora Woods SAC, the PA was satisfied that this European site could be screened out on the basis that the potential direct or indirect effects identified were associated with the separate grid connection proposal only and were not cumulative.

4.8. Appropriate Assessment

The report proceeds to carry out AA, including consideration of the NIS, proposed mitigation and the report received from the Environmental Assessment Officer of CCC.

In relation to Lough Derg (Shannon) SPA the report notes the conclusions of the NIS that the project site is of no ecological importance to cormorant, that there is no hydrological connection between the project site and the SPA, and no further assessment or mitigation is deemed necessary. The report also accepts that there is no potential for significant effects on Slieve Bernagh Bog SAC.

In relation to the downstream European Sites: Lower River Shannon SAC and the River Shannon and River Fergus SPA, the primary concern of the PA relates to impacts on downstream water quality as a result of elevated concentrations of suspended solids and nutrient enrichment. The PA is satisfied that the mitigation for the protection of surface water will ensure that the qualitative status of the receiving surface water bodies will not be altered. However, the report finds that the submitted documents, particularly Appendix 9-3, relies on Doon Lough, a designated NHA downstream of the development, to provide a dilution effect and act as a hydrological buffer between the proposed development and downstream European sites. The premise that Doon Lough will provide a buffer to downstream European Sites is not accepted by the PA. Similarly, the PA notes that the applicant relies on the significant volume of water and considerable dilution effect of Lough Derg to buffer downstream European Sites but finds that as the Ardcloony River discharges to the

southern end of Lough Derg it does not provide a buffering effect to the downstream catchment.

- 4.9. The PA concluded therefore, in its AA, that it was unable to reach a determination that the proposed development will not adversely affect the integrity of European sites (Lower River Shannon SAC and the River Shannon and River Fergus SPA). It opined that doubt remains and that in accordance with the findings of Sweetman V Ireland C-25/11, a refusal of planning permission was recommended.

4.10. Environmental Impact Assessment (“EIA”)

- 4.11. The report notes the content of the submitted EIAR and the legal obligations of the PA to undertake a process of EIA, which is set out under the respective chapter headings. The PA raises no concerns in relation to Air Quality, Archaeology, Architectural Heritage, Cultural Heritage and Telecommunications and simply notes the statutory reports in respect of Aviation. The PA is generally satisfied with the level of assessment in respect of Major Accidents and Natural Disasters and Interaction of Effects. The report largely adopts the findings of the Environmental Assessment Officer (EAO) and were this is the case I have simply referred to the detail of that report.

- 4.12. Chapter 5 – Population and Human Health

- 4.13. The report notes the identification, description and assessment of potential significant direct and indirect effects of the proposed development on population and human health in this Chapter which are then primarily discussed under the sub-headings of shadow flicker and residential amenities.

Shadow Flicker

- 4.14. The report notes that there is potential for shadow flicker to occur at 45 of 64 properties assessed and that in a no mitigation scenario this will exceed maximum daily guidelines of 30mins. In addition, the report notes that 5 properties have the potential to experience cumulative shadow flicker with the permitted Fahey Beg windfarm. The report considers this to be a highly undesirable scenario which will

significantly degrade residential amenity. Otherwise, the report notes that shadow flicker has been assessed based on the 2006 Guidelines and notwithstanding the EIAR suggestion that the windfarm can be modified to ensure compliance with the 2019 Guidelines, the required higher level of mitigation has not been included.

Residential Amenities

- 4.15. The report notes that much of the consideration of impacts on residential amenity in Chapter 5 is cross referenced to more detailed assessments in later Chapters of the EIAR. At this juncture the report opines that the impacts from construction phase noise are underestimated on the basis that:
- it is intended to extract 10,000m³ of stone from a proposed on-site borrow pit and the noise impacts of this activity have not been considered;
 - the traffic movements associated with concrete pours are intense;
 - it is unclear where the necessary aggregate materials will be sourced (there does not appear to be an authorised source for aggregate materials at the location indicated stonedirect.ie, Broadford, 5km west of the site); and
 - The local Area Engineer indicates that the local road connecting Broadford to Kilbane should not be used for construction traffic, therefore all construction traffic, a highly intense level, will have to use the R466 north through Kilbane Village negatively affecting the residential amenities for the properties along this route.
- 4.16. Otherwise the report finds that the assessment of economic impacts is inadequate and that potential negative impacts on small scale local businesses and the local economy is not assessed; that the EIAR does not assess the potential impact on recreational activity, especially during the construction phase; and that whilst the EIAR considers potential devaluation of property it does not attempt to assess the impact of the proposed wind farm on the attractiveness of the receiving area as a place of residence. In general, the report considers that many key issues in relation to tourism, recreation, local amenities and the local economy have not been adequately considered.
- 4.17. Chapter 6 - Biodiversity (excluding birds)

The report expressed concerns in relation to impacts on Bats, including cumulative impacts, largely as a result of vegetation clearance and collision risk as set out in the EAO report.

4.18. Chapter 7 – Birds

4.19. The report expressed concerns in relation to impacts on Birds, including cumulative impacts, as a result of a high number of permitted and proposed developments within a limited geographical area as set out in the EAO report.

4.20. Chapter 8 – Land, Soils and Geology

4.21. The report accepts that it is reasonable to assert that risks associated with peaty topsoil can be effectively managed through standard design and construction mitigation measures ensuring the short- and long-term stability of the site.

4.22. The report notes the proposal (Appendix 4-2) to manage runoff from the borrow pit by pumping to settlement ponds but is concerned that there is a considerable risk of major accident or emergency should a type of “bog burst” occur after a period of excessive rainfall for the reasons set out in the EAO report.

4.23. Chapter 9 – Hydrology and Hydrogeology

4.24. The PA repeats the concerns identified in the AA process that Doon Lough or Lough Derg cannot be relied upon to act as a hydraulic buffer between the site and downstream watercourses and bodies for the reasons also set out in the EAO report.

4.25. Chapter 11 – Climate

The report finds the assessment of climate issues in the EIAR to be generally acceptable but notes that the use and potential impacts of SF6 Insulation Gas in the turbine and any leakage of same has not been referenced or considered. The report also opines that an assessment of the carbon footprint and embodied carbon of in-situ turbine foundations in the decommissioning phase should have been undertaken together with an assessment of the impact on habitats in terms of carbon from leaving foundations in-situ in perpetuity.

4.26. Chapter 12 – Noise and Vibration

The report is generally not satisfied that noise-related impacts of the construction or operational phase have been adequately assessed or mitigated. The report notes that the National Environmental Health Office of the HSE is also dissatisfied with the noise-related assessment contained in the EIAR. The following considerations in particular are highlighted:

- Assessment has been undertaken in accordance with the 2006 Guidelines, these Guidelines have not been updated to reflect changes in technology and turbine heights;
- Whilst likely cumulative noise levels appear to stay within the 2006 Guidelines, the submission from the NHES (HSE) indicates that an increase in noise level of 10dB above existing rated noise levels will have a significant adverse impact at noise sensitive locations. This is the case in relation to daytime construction noise at Noise Monitoring Location 2 (which roughly aligns with Construction Noise Assessment Location 4) and other noise sensitive locations, where the increase in noise levels would be substantially in excess of recommended 10dB increase limit;
- The noise associated with rock extraction and rock breaking has not been adequately assessed in the EIAR;
- The Construction Noise Report does not provide satisfactory details of how construction phase noise levels have been estimated;
- There has been no estimate of the likely vibration levels generated by construction work or potential impacts on nearby receptors;
- There is a concern in respect of the enforceability of any conditions in respect of amplitude modulation and sustained periods of OAM, including the Community Liaison Officer.

4.27. Chapter 13 – Landscape and Visual Impact Assessment

The report expresses concern in relation to visual impact from a number of perspectives. It notes that T1 and T2 have the lowest level of visual impact due to higher lands to the north and northwest providing a strong backdrop and opines that T5 and T6 are exceptionally prominent due to their siting on a ridgeline/close to a

ridge and are most prominent due to the extent that they break the skyline. The report considers that the most significant issue is the cumulative impact with the permitted Fahy Beg windfarm and opines that the potential combined visual impact of both developments will severely alter the character of the local area, and this will be most particularly evident from the R466 Scenic Route and from Gap Road westbound from Killaloe to Kilbane particularly in the river valley in the Aillemore area (VP15). The report opines that these concerns have not been satisfactorily allayed by the EIAR.

4.28. Chapter 15 – Material Assets

Traffic and Transport

- 4.29. The report is concerned that the applicant has not identified a suitable source of aggregate and stone required for the construction of the development, which is said to be a quarry 5km west of the development site (stonedirect.ie). The report states that there does not appear to be an authorised, active quarry at the location identified on the submitted maps and therefore there is uncertainty as to the route which will be used to transport the stated 816 truck loads to the site. In addition the report notes that Fig. 15.1 shows the *crushed stone/concrete haulage route* originating in Broadford Village, but submits that there is no batching plant or quarry in the village, therefore the actual point of origin of construction materials is also unknown. Furthermore, the report states that the movement of large volumes of HGV's through the village has not, in any event, been assessed in any of the transport documents received. This is estimated at 816 inbound loads of stone and 688 inbound loads of concrete.
- 4.30. The report opines that the estimated concrete pour for turbine foundations (80 truck loads over a 12-hour period) appears to be low. The report opines that there is no proper assessment or mitigation of potential cumulative effects and holds serious concerns in relation to the co-ordination of traffic movements associated with multiple windfarm developments together with existing and proposed quarry and infilling operations.
- 4.31. The report finds that the issue of pedestrian and cyclist safety during the construction phase does not appear to have been addressed, particularly with regard to the East

Clare Way walking route and local roads and the report is not satisfied that the impact of traffic movements on residential amenities has not been assessed in sufficient detail.

4.32. Chapter 18 – Reasoned Conclusions

4.33. The report states that having regard to the assessment set out, the submitted EIAR and the submissions received, that the main significant direct and indirect effects of the proposed development on the environment are as follows:

- Impacts, including cumulative impacts on the landscape having regard to the height and scale of the turbines, the elevated siting and the views available;
- Impacts on population and health as a result of noise, vibration and traffic nuisance during construction, and noise during operation;
- Impacts on water quality due to proposals for the management of surface water and spoil during construction;
- Impacts on material assets, including cumulative impacts, on the road network, pedestrian and traffic safety;
- Impacts, including cumulative impacts, on biodiversity due to the extent of vegetation clearance; and
- Impacts on Birds, including cumulative impacts, as a result of a high number of permitted and proposed developments within the limited geographical area.

4.34. Assessment

4.35. The report then sets out an assessment of the main issues arising in the consideration of the planning application under three headings: ‘Principle of development’, ‘Visual Amenities’, ‘Residential Amenities’, and ‘Biodiversity Impacts’ which can be summarised as follows:

Principle of development:

4.36. The report establishes that the existing Wind Energy Strategy (“WES”) set out in Volume 6 of the CCDP was first prepared in 2009 and has been incorporated into subsequent Development Plans unchanged in accordance with Circular Letter PL 20-

13. The report states that the PA awaits the publication of finalised Section 28 Guidelines before preparing a new or updated strategy and that it should be noted therefore that the existing wind energy strategy has been in place for over 14 years and remains the planning policy framework that guides wind energy developments.

- 4.37. The report expresses concern that the advancements in turbine technology, energy output, height and scale are not accounted for in the existing Guidelines and is also concerned that the cumulative impact of the proposed development with other applications may not have been fully addressed in the submitted EIAR.
- 4.38. The report notes that the proposed development is located within an area which is designated as being 'Open for Consideration' for wind energy developments and where applications will be assessed on a case-by-case basis subject to viable wind speeds, environmental resources and constraints, and cumulative impacts and that key issues such as the wind resource, residential amenities, landscape and visual impacts, landslide susceptibility, potential impacts on tourism, recreation and amenities must be considered.
- 4.39. The report refers to the key issues raised in its EIA and AA and planning assessment relating primarily to cumulative impacts, residential amenity, visual, traffic and water quality impacts and is not satisfied that the principle of wind energy development is acceptable at this location.

Visual Amenities

- 4.40. The report notes that the site is located in the 'Slieve Bernagh Uplands Landscape Character Area' (LCA8) and opines that the site is within areas identified as highly sensitive. The report finds that the submitted visual photomontages do not represent roads, tree clearance, settlement ponds, swales etc and therefore do not represent the landscape changes which will occur particularly at a local level. The report considers that the proposed development represents a significant intrusion on the local landscape which will have a significant, negative impact on the visual amenities of the area for the reasons already set out in its EIA.

Residential Amenities

- 4.41. The report refers to the noise, traffic, visual and cumulative impacts previously discussed in the EIA, and which are considered to impact negatively on residential amenities.

Biodiversity Impacts

- 4.42. The report refers to the assessment of impacts on European sites set out in the EIA in relation to Chapters 6 and 7 and states that whilst the surveys undertaken by the applicant are robust and the proposed development is unlikely to significant impact bird species by itself, significant concern is expressed in relation to potential cumulative impacts on bird species, including SCI's of European sites.

Conclusion & Recommendation

- 4.43. Having regard to the foregoing, the report recommends that planning permission be refused for the three reasons summarised in Section 3.1 of this report. This report is signed by an Executive Planner and a Senior Executive Planner. The decision maker was a Senior Planner with delegated authority from the Chief Executive of CCC.

5.0 Other Technical Reports

5.1. Road Design Planning Report (Clare County Council)

This report provides recommended conditions and/or raised issues which are considered to be conditionable. These conditions are considered in Table E, Section 15.26 of this report.

5.2. Killaloe MD Office (Roads Operations & Maintenance Team)

This report provides observations and recommended conditions under specific headings including Tree Felling, Wind Turbine/Blade Delivery, Road Reinstatement, Road Closures, Bridges/Culverts/Pipelines, and Road Opening Licences. These conditions are considered in Table E, Section 15.26 of this report.

5.3. Environmental Assessment Officer (Clare County Council)

- 5.4. This is a detailed report which addresses AA, WFD, EIA and cumulative considerations. The report can be summarised as follows:

Appropriate Assessment

- The conclusion of the applicants AA Screening Assessment is accepted.
- The subsequent exclusion of Lough Derg SPA (004058) from further assessment in the AA process is noted and not challenged.
- The removal of risk of potential direct impacts on Glenmora Woods SAC (001013) though the inclusion of Mitigation by Avoidance is noted and not challenged.
- The potential for indirect effects on Qualifying Interest Species of the Lower River Shannon SAC, and on species of Special Conservation Interest of the River Shannon and Fergus Estuaries SPA, in the form of water quality deterioration and habitat degradation via surface and ground water pathways during construction, operation and decommissioning is noted.
- It is opined that these risks primarily arise during the construction phase and that as a result of drainage ditches across the site, which flow into 5no. watercourses within the site, there is a direct surface water pathway between the site and downgradient watercourses. This presents a risk that pollutants and sediment laden surface water run-off could impact sensitive watercourses and aquatic species downstream of the Lower River Shannon SAC and River Shannon and Fergus Estuaries SPA.
- The mitigation measures to protect water quality at construction stage, as outlined in Section 6.2.1.2.1 of the NIS and the drainage maintenance plan in Section 9.5.2.2. of the EIAR, are simply noted. At operational stage the report is satisfied that there is no direct discharge to downstream receiving waters or ground waters and that mitigation will ensure the qualitative status of receiving surface water bodies and the receiving ground water body will not be altered.

Water Framework Directive

- In relation to Appendix 9-3 and the submitted Water Framework Directive Assessment HES Final Report (July 2024), the report does not agree that all surface waterbodies downstream of Doon Lough can be screened out of a compliance assessment on the basis that Doon Lough provides a dilution effect. It is noted that the authors indicate that the Lough acts as a hydrological buffer

between the Wind Farm and Grid connection route and downstream watercourses, however the report opines that this implies that the Lough (a designated NHA) is impacted most by any pollution and therefore is not satisfied that Objective 3.3 and 15.5 of the CCDP for the conservation and protection of NHA's can be met in the context of the proposed development.

Cumulative and In-Combination Considerations

- The report notes that existing, permitted and/or proposed windfarm developments were considered within a cumulative hydrological study area, which identified only 2 no. wind farms. This is considered to be conservative given the number of windfarm applications with the 'zone of influence' of the subject proposal. It is considered that this approach does not take account of noise or disturbance effects to birds, which would have identified further windfarms as having potential for cumulative and in-combination effects.
- The report notes that the issue of cumulative impacts on birds was raised by the DHLGH as a key topic requiring consideration in its response to the applicants consultation in January 2023, and that cumulative impacts with the Carrownagowan Windfarm was specifically identified. The report notes that the Carrownagowan Windfarm does not appear to have been identified within the cumulative hydrological study area. The report opines that there is significant potential for cumulative effects with the Oatfield, Lackerragh, Carrownagowan and Ballycar windfarms.

- 5.5. The report notes that the EIAR outlines how the implementation of mitigation measures for the proposed development and other windfarms will ensure that there are no cumulative effects, but opines that there is no analysis, information or scientific assessment to indicate how this conclusion has been reached. In this regard this report makes reference to issues which it says were inadequately addressed in the NIS in respect of the Fahy Beg Windfarm leading to a decision by CCC to refuse permission and opines that these matters have not been addressed in the application to hand as part of cumulative and in-combination effects.
- 5.6. Specifically, with respect to bird species this report holds that it is difficult to see how the cumulative impact of 66 turbines, comprising the proposed development and

other permitted and proposed developments within a 25km radius, has been sufficiently addressed within both the EIAR and NIS. The report opines that a cumulative assessment should be undertaken at a strategic level which examines how the high number of turbines in one discrete area impacts bird behaviour from foraging, breeding and transiting with displacement due to behavioural response being a key consideration. The report strongly contends that a population wide impact needs to be analysed and assessed and that it is not sufficient to close out this requirement by indicating that mitigation measures identified at a project level are sufficient to avoid cumulative impacts.

5.7. With respect to the cumulative assessment of impacts on water quality the report notes that Chapter 9 of the EIAR finds, based on the cumulative hydrological study area, that there is no potential for effects to occur downstream of Doon Lough or Lough Derg as the waterbodies contains a significant volume of water, have a considerable dilution capacity and will act as a hydraulic buffer. The report opines that this implies that both Doon Lough and Lough Derg can take impacts from the proposed development and assimilate them based on the dilution factor and that this position also intimates that both lakes will be impacted and take any pollutants arising from construction or operation. The report finds this position at odds with the NIS which indicates mitigation measures will be needed to protect the surface water status of Doon Lough and Lough Derg. The report notes that hydrological connectivity of the site to these waterbodies and the associated WFD status. The report opines that given the location of hydrological discharge to Lough Derg at its southern end, it is likely that any impacts will affect the River Shannon as opposed to Lough Derg which will not provide a buffering effect to the downstream catchment.

5.8. Environmental Impact Assessment

5.9. The report notes the proposed Peat and Spoil Management Plan, set out in Appendix 4.2 of the EIAR and specifically the proposal to remove approx. 15,000 cubic metres of material from an on-site borrow pit. The report is concerned that the proposals for reinstatement of this borrow pit using excavated peat and spoil in dedicated cells with run-off managed through pumping to settlement ponds or overflow pipes does not include locational detail. The report opines that it is difficult to see how or where such

settlements ponds or overflow pipes can be located to adequately assimilate or mitigate potential sediment run-off. The report opines that sediment run-off is highly likely within the borrow pit particularly after initial emplacement given the change from rock to peat and spoil in high quantities and the location which is restricted by the 'gap road'. The report opines that this presents a considerable risk of a major accident or emergency should a 'bog burst' occur, particularly after a period of excessive rainfall and that quantities could cause irreparable damage to downstream water quality.

- 5.10. With regards to Biodiversity the report primarily focuses on impacts on bat species. The habitat removal and replanting proposals are noted, and the report opines that neither EIAR Chapter 6, the Bat Report (Appendix 6-2) or the Biodiversity Management and Enhancement Plan provide a comparison of where bat species were recorded through transect surveys relative to hedgerows proposed for removal and subsequent replanting proposals. The report submits that linear features are critical to bat species and retention of connectivity across the landscape is a key requirement. The report specifically opines that there is potential for in-direct impacts on the lesser horseshoe bat through the loss of linear foraging features and this has not been assessed in the EIA.
- 5.11. The report opines that the proposed curtailment strategy outlined in Appendix 6-2 through the SCADA system will reduce but will not exclude the potential for collision risk in the context of the high local importance of the various bat species recorded on site and in the results of the static survey.
- 5.12. The report does not accept the conclusions of the EIAR that there will be no residual adverse effects on bats as a result of the project, and no cumulative adverse effects on bat populations when considered in-combination with other plans and projects. The report opines, given the foraging range of bats, that there is a high probability that bat species forage, commute or use roosting resting spots across multiple permitted and proposed windfarms within 10km of the proposed development and that there is no assessment as to the cross over in foraging ranges or impacts associated with the construction of a high number of turbines in one discrete area.

- 5.13. In relation to climate the report notes the proposal to leave in-situ turbine foundations in perpetuity in the decommissioning phase and submits that an assessment of the carbon footprint, embodied carbon and impacts on habitats should have been undertaken.
- 5.14. In conclusion the report finds:
- Given the absence of complete, definitive findings with respect to cumulative and in-combination effects and the high number of windfarms proposed within a 25km radius of the site, it is not possible to reach a determination of no adverse effects on Glenomra Wood SAC, Lower River Shannon SAC, Lough Derg (Shannon) SPA and River Shannon and River Fergus Estuaries (SPA).
 - The gaps in the information and assessment contained in the application leave scientific doubt as to potential effects, therefore the proposal does not meet the standard in terms of ‘sustainable AA’ under ‘Connelly v An Bord Pleanala’ and does not meet the key AA legal requirements in light of the findings of ‘Kelly v An Board Pleanala’.
 - CCC, as competent authority for AA, must refuse the application having regard to the findings of ‘Sweetman V Ireland C-258/11’ that where doubt remains as to the absence of adverse effects, authorisation must be refused.

6.0 Prescribed Bodies

6.1. Shannon Airport Authority (“SAA”)

- 6.2. In a report dated 2nd September 2024, SAA submit that in general terms the siting of wind turbines at the proposed location may have implications for the operations of the communication, navigation and surveillance systems used by Air Nav Ireland for the separation and safety of aircraft. In order to consider any ‘Annex 14’ obstacle limitation surfaces (OLS) impacts the report advises that they will need to carry out their own internal assessment which requires the developer to provide the geographical location data expressed in WGS 84 format for all 7 turbine locations as well as the ‘Above Mean Sea Level’ (AMSL) ground heights at each turbine location.

- 6.3. The report notes and shares the concerns of colleagues in Air Nav Ireland in relation to potential impacts on instrument flight procedures (IFP's) and NAVAIDS/radar systems and recommends developer liaison with Air Nav Ireland to ensure that there are no issues with the aforesaid systems.

The report concludes with recommended conditions in relation to inclusion in the IAA Electronic Air Navigation Obstacle Dataset, Visual Aids for Denoting Obstacles and pre-commencement approval of crane activity. These conditions are considered in Table E, Section 15.26 of this report.

6.4. *Development Applications Unit ("DHLGH") – Archaeology*

In a report dated 2nd October 2024, the DHLGH acknowledges the findings of the cultural heritage impact assessment and broadly concurs with same and the recommended mitigation measures therein. The DHLG recommends a programme of pre-construction archaeological test excavation and archaeological monitoring be included as condition of any grant of planning permission. Recommended conditions are set out in the report which align with Sample Conditions C.3, 4 and 6 of the OPR Practice Note PN03: Planning Conditions (October 2022) with appropriate site-specific adaptations. These conditions are considered in Table E, Section 15.26 of this report.

6.5. *Inland Fisheries Ireland ("IFI")*

In a report dated 7th October 2024, the IFI confirm that their chief concern is the protection of the inland fisheries resource including water quality, aquatic habitats and their associated riparian corridors. In this regard a number of comments and recommendations are provided which are considered to be conditionable items. These conditions are considered in Table E, Section 15.26 of this report.

6.6. *Irish Aviation Authority ("IAA")*

In a report dated 8th October 2024, the IAA recommends that the applicant should be required to engage with Air Nav Ireland to confirm that the proposed windfarm and associated cranes (during construction) will have no impact on instrument flight procedures and communication, navigation and surveillance equipment at Shannon Airport or other enroute communication, navigation and surveillance equipment. In

the event that planning permission is granted, conditions are recommended in relation to aeronautical obstacle warning lights, as constructed coordinates and pre-commencement notification of crane operations. These conditions are considered in Table E, Section 15.26 of this report.

6.7. *HSE, National Environmental Health Service (“NHES”)*

6.8. In a report dated 14th October 2024, the NHES confirms that the EIAR has been prepared in accordance with its response to a scoping request from the applicant and that reference has been to the correct general guidance. The report also clarifies that its response is provided from a population and human health perspective, which does not consider individual specific sensitivity of a human receptor.

6.9. In relation to noise, the report notes the High Court decision in *Webster/Rollo V Meenaclogher (Wind) Limited* (2024 IEHC 136) and details of the judgement in relation to private nuisance. With regard to Chapter 12 of the EIAR the report notes that in the noise and vibration assessment the use of the term ‘significance’ refers to compliance or non-compliance with the 2006 Guidelines derived noise limits and that predicted noise at or less than the noise limits defined in the 2006 Guidelines is deemed ‘not significant’, and that any breach has the potential to result in a ‘significant effect’. The NEHS does not accept this position and submits that where knowledge on an evaluation criterion of significance has developed since the publication of guidance then it is reasonable and correct to use the developed knowledge base in assessing the significance of any effect. In this regard the NEHS recommends that:

- Tabulation of the predicted change in the noise environment from the proposed development, and cumulative change in the original baseline noise environment before any windfarm development in the area, would be the most informative way of assessing the effect of operational noise.
- The most appropriate criteria for assessing significance of predicted noise would be the World Health Organisation (WHO) ‘Environmental Noise Guidelines for the European Region, 2018’.

- The existing noise data should be assessed against the WHO 2018 Guidance noise criteria and should include cumulative noise impacts from existing and planned windfarm development.

6.10. In relation to shadow flicker the report recommends compliance with the 2019 Draft Guidelines. The report notes the draft CEMP submitted in Appendix 4.3 of the EIAR and is satisfied that there will be adequate protection of public and environmental health during the construction phase if all mitigation measures are implemented in full. The report otherwise provides comments in the interests of protecting public health and concerning drinking water, wastewater, the storage of peat and control of construction phase.

7.0 Third Party Observations

7.1. There were 86 submissions from third parties in respect of the planning application to CCC. All of these submissions are noted. The issues raised in these submissions are captured in the observations to this appeal which are detailed in Table D of this report.

8.0 Planning History

8.1. A review of the CCC Planning Portal and the Board's case files was carried out on 3rd March, 2025 to collate any relevant, recent (within 10 years) planning history for the site.

8.2. *Subject site*

ABP-318846-24 (CCC Ref.23/60441)

Date of Decision: 3rd January 2025.

Permission granted to EDF Renewables Ireland Limited, subject to 5 no. standard type conditions, for the erection of a temporary 100m high lattice type meteorological mast for a period of 2 years, with hardstanding area and all ancillary works.

8.2.1. Other Wind Farm/Grid Connection Developments (*In proximity to the site*)

Table A: Wind Farms and Grid Connection Developments in proximity to the subject site				
Ref. No.	Name/Location	Status	No. of Turbines	Note
ABP-318846-24	Killeaghy (Goonan), Co. Clare	Granted 03/01/2025	n/a	Temporary 5-year permission for a 100m high Met Mast within the subject site.
ABP-308799-20	Coillte Carrownagowan, Co. Clare	Granted 29/09/2022	19.	Approx. 1.8km to the north, boundary to boundary (at closest point).
ABP-318505-23	Futureenergy Carrownagowan, Co. Clare	Granted 23/01/2025	n/a	110kV underground ground grid connection cable connecting the permitted Carrownagowan WF to the existing 110Kv substation at Ardnacrusha. This development runs north to south in a location to the west of the subject site. It is 200m from the site boundary at its closest point.
ABP-317227-23	Rwe Renewables Ireland Limited Fahyeg, Co. Clare	Granted 06/03/2024	8.	Approx. 0.8km to the south, boundary to boundary (at closest point).
ABP-318782-24	Orsted Onshore Ireland Midco Ltd Oatfield, Co. Clare	Pending	11.	Approx. 4.8km to the west/southwest, boundary to boundary (at closest point).
ABP-318943-24	Ballycar Green Energy Ltd Ballycar, Co. Mayo	Pending	12	Approx. 10.6km southwest, boundary to boundary (at closest point).
ABP-320705-24	FuturEnergy Knockshavno, Co. Clare	Pending	9.	Approx. 4km to the west/southwest, boundary to boundary (at closest point)

8.3. Other (non-residential) Developments (in proximity to the site)

8.4. ABP-316043-23 (CCC Ref. 22/591)

Date of Decision: 21st November 2023.

Permission granted to Reeve Wave Ltd, subject to 13 no. conditions, for the construction of a solar array consisting of 265,000m² of solar panels, 8 control cabins, 2 ring main units, underground cabling, creation of a new entrance on L70382 and all associated ancillary site works at Ballyglass, Coolderry, Dromintobin North, Reanbrone and Oakfield, Ardnacrusha, Co. Clare. This site is approx. 7km south of the subject site.

8.5. **ABP-316237-23** (CCC Ref. 23/57)

Decision: Application Withdrawn.

Application for Solar Farm and all associated site works at Castlebank, Glenlon North, Glenlon South, Drummin and Ballykeelaun, Co. Clare. This site is approx. 9km southwest of the subject site. The application had been granted by CCC. It was subsequently withdrawn by the applicant at appeal stage.

8.6. **ABP-304690-10** (CCC Ref. 18/818)

Date of Decision: 13th December 2019

Permission granted to Bobby O'Connell and Sons Ltd, subject to 21 no. conditions, for a 10ha extension to Quarry. The existing quarry had been granted planning permission pursuant to ABP Ref.No. PL 03.227746. This site is located approx. 10km southwest of the subject site.

8.7. *Residential & Agricultural Developments*

8.8. There are a limited number of planning applications in the vicinity of the site in respect of residential and agricultural developments at a level consistent with such a rural location. The residential applications are noted and considered in the assessment, particularly in the context that there are established dwellings in closer proximity to the subject site.

8.9. The agricultural applications consist of permissions for slatted sheds within established small-scale farmyards/complexes.

9.0 Policy Context

9.1. National

- 9.2. At a high level, the Board should note several national level policies and guidance which will be relied upon in the assessment. These include:

9.3. Climate Action Plan 2024 (“CAP24”) and 2025 (“CAP25”)

Under the Climate Action and Low Carbon Development Act, 2015, as amended, Ireland's national climate objective requires the State to transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by no later than the end of 2050. This national climate objective meets Ireland's obligations under EU and international treaties, including the Paris Agreement (2015), the European Green Deal and the EU's objective to reduce GHG emissions by at least 55% by 2030 (compared to 1990 levels) and achieve climate neutrality by 2050.

- 9.4. To meet its targets and obligations CAP 24 sets a course for Ireland to halve emissions by 2030 and reach net-zero no later than 2050. In terms of the electricity sector a 75% reduction in emissions based on 2018 levels is required by 2030 and CAP 24 provides that central to achieving this is the strategic increase in the share of renewable electricity to 80% by 2030 including ambitious targets of deploying 9GW of onshore wind, 8GW of solar power and at least 5GW from offshore wind projects.
- 9.5. CAP 2025 was published on 15th April, 2025. It re-affirms the previous commitment to increase the share of renewable electricity generation to 50% by 2025 and 80% by 2030 including onshore wind targets of 2GWs by 2025 and 9 GWs by 2030.

9.6. Project Ireland 2040: National Planning Framework (“NPF”), First Revision of the NPF and the National Development Plan (“NDP 2018-2027)

- 9.7. Project Ireland 2040 is the Government's long-term overarching strategy to make Ireland a better country for all and to build a more resilient and sustainable future. The NPF and the NDP combine to form Project Ireland 2040, with the NPF setting a shared vision and spatial strategy for the development of the country out to 2040 and the NDP providing the enabling investment to implement that strategy.

- 9.8. The NPF sets out to deliver its spatial strategy through a set of National Strategic Outcomes (“NSO’s”), including: ‘Strengthened Rural Economies and Communities’, ‘Enhanced Amenities and Heritage’, and ‘Transition to a Low Carbon and Climate Resilient Society’ which establishes a national objective of achieving transition to a competitive, low carbon, climate resilient and environmentally sustainable economy by 2050. The first revision of the NPF has been approved by both Houses of the Oireachtas, following the decision of the Government to approve the final revised NPF on 8th April, 2025. The ‘First Revision’ introduces regional renewable electricity capacity allocations for each of the three Regional Assemblies to be achieved by 2030 which for the Southern Regional Area is an additional 978MW, with a total energised capacity of 3,600MW or 40% of the National share in 2030. This is the minimum required for wind generation to meet the 2030 emission reductions in the electricity sector.
- 9.9. The NDP 2018-2027 sets out the investment priorities that will underpin the implementation of the National Planning Framework, through a total investment of approx. €116 billion. It recognises that Ireland’s energy system requires radical transformation in order to achieve its 2030 and 2050 targets and objectives. It recognises that investment in renewable energy sources affords Ireland an opportunity to decarbonise our energy generation, but that this must be complemented by wider measures to moderate growth in energy demand, increase energy security, diversify supply sources and facilitate more variable electricity generation on the grid.
- 9.10. **White Paper on Energy – Irelands Transition to a Low Carbon Future 2015 - 2030.**
- 9.11. These are all directly and indirectly supportive of renewable energy projects which extends to wind energy. It is noted that a more detailed setting out of national and regional policy is contained in the Planning Report should it be required by the Board.
- 9.12. In addition, this report and assessment has considered the development guidelines for wind farms which set out a range of considerations for considering such an application:

- Department of Environment, Heritage and Local Government (DEHLG) (2006) Wind Energy Guidelines (WEDG, 2006).
- DHLGH (2019) Draft Wind Energy Guidelines (dWEDG, 2019). The draft guidelines have not been issued under Section 28 of the Planning and Development Act, 2000 (as amended) and, as per Circular 05/2017, the WEDG 2006 remain in force.

9.13. National Biodiversity Action Plan (NBAO) 2023-2030

9.14. The NBAP includes five strategic objectives aimed at addressing existing challenges and new and emerging issues associated with biodiversity loss. Section 59B(1) of the Wildlife (Amendment) Act, 2000 (as amended) requires the Board, as a public body, to have regard to the objectives and targets of the NBAP in the performance of its functions, to the extent that they might affect or relate to the functions of the Board. (The impact of a development on biodiversity, including species and habitats, can be assessed at a European, National and Local Level and is taken into account in the Board's decision-making having regard to the Habitats and Birds Directives, Environmental Impact Assessment Directive, Water Framework Directive and other relevant legislation, strategy and policy where applicable).

9.15. Regional

9.16. Regional Spatial & Economic Strategy for the Southern Region ("RSES")

9.17. The RSES provides a long-term, strategic development framework for the future physical, economic and social development of the Southern Region. It seeks to achieve balanced regional development and full implementation of the NPF, and it sets out a vision for the region to (inter alia) protect and enhance its environment, successfully combat climate change and accommodate expanded growth and development in suitable locations. It came into effect on 31st January 2020.

9.18. The RSES is committed to implementing regional policy consistent with the Climate Action Plan (then 2019) and in its Strategic Vision sets out three priority areas to address climate change and bring about transition to a low carbon economy:

- decarbonisation,
- climate resilience, and

- resource efficiency.

9.19. In relation to Renewable Energy, it is an objective of the RSES to:

“support the sustainable development of renewable wind energy (on shore and off shore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines” – RPO99.

9.20. Local

9.21. Clare County Council Development Plan 2023-2029 (“CCDP”)

9.22. The statutory development plan for the area is the Clare County Development Plan, 2023-2029 (“CCDP”).

9.23. Volume 1 contains the written statement and constitutes the main body of the CCDP outlining the vision, core strategy and objectives for different policy areas. It is structured into 20 chapters each of which identifies a goal, supported by strategic aims and objectives to realise the vision for the CCDP by 2029. The following key provisions are considered relevant, particularly with regard to the decision of the PA:

- Chapter 2 – Climate Action

Objective CDP2.1(a)	To support the implementation of the National Climate Action Plan (2023) and the National Climate Change Adaptation Framework (and any subsequent versions thereof), and to work with the Regional Climate Action Offices to enable County Clare to transition to a low carbon and climate resilient county;
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- Chapter 3 – Core Strategy

Objective CDP3.3	a) To require compliance with the objectives and requirements of the Habitats Directive, specifically Article 6(3) and where necessary 6(4), Birds, Water Framework, and all other relevant EU Directives and all relevant transposing national legislation; b) To require project planning to be fully informed by ecological and environmental constraints at the earliest stage of project development and any necessary assessment to be undertaken, including assessments of disturbance to species, where required together with the preparation of both statutory and non-Statutory Ecological Impact Assessments (EclA); c) To protect, manage and enhance ecological connectivity and improve the coherence of the Natura 2000 Network; d) To require all proposals to ensure there is ‘no net loss’ of biodiversity within developments; e) To ensure that European sites and Natural Heritage Areas (designated proposed NHAs) are appropriately protected; f) To require the preparation and assessment of all plans and projects to have regard to the information, data and requirements of the Appropriate Assessment
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	Natura Impact Report, SEA Environmental Report and Strategic Flood Risk Assessment Report contained in Volume 10 of this development plan; and g) to require compliance with the objectives of the Water Framework Directive and support the implementation of the 3rd Cycle River Basin Management Plan (and any other iteration during the lifetime of the plan)
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- Chapter 8 – Rural Development and Natural Resources

Objective CDP8.12	To support the implementation of the National Renewable Energy Action Plan (NREAP), the Clare Wind Energy Strategy and the Clare Renewable Energy Strategy to facilitate the development of renewable energy developments in rural areas to meet national objectives towards achieving a low carbon economy by 2050 subject to the requirement of the RES SEA Environmental Report and the mitigation measures arising from the CDP Appropriate Assessment as contained in Volume 10(a).
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- Chapter 11 – Physical Infrastructure, Environment and Energy

Objective CDP 11.26	a) To facilitate the implementation of the River Basin Management Plan 2022-2027 and any subsequent plan for ground, surface, estuarine, coastal and transitional waters in the Plan area as part of the implementation of the EU Water Framework Directive; b) To protect groundwater and surface water resources in accordance with the statutory requirements and specific measures as set out in the River Basin Management Plan 2022-2027, and any subsequent management plans; c) To achieve and maintain at least good water quality status for all water bodies except where more stringent obligations are required such as Blue Dot/High Status Objective Water Bodies; d) To consider development proposals where it can be clearly demonstrated that the development will meet the requirements of the River Basin Management Plan; and, e) To work with and support LAWPRO and support improvements/recommendations within Priority Areas for Action, Blue Dot/High Status Objective catchments and any additional areas identified within subsequent River Basin Management Plans.
Objective CDP 11.27	a) To support the protection and improvement of the quality of drinking water sources in line with the requirements of the Water Framework Directive; b) To ensure that developments that would have an unacceptable impact on water resources, including surface water and groundwater quality and quantity, designated sources protection areas, estuarine, coastal transitional waters, river corridors and associated wetlands will not be permitted; c) To ensure the efficient and sustainable use and development of water resources and water services infrastructure in order to manage and conserve water resources in a manner that supports a healthy society, economic development requirements and a cleaner environment; d) In areas of potable groundwater resources or over vulnerable aquifer areas, to consider development proposals only if the applicant can clearly demonstrate that the proposed development will not pose a risk to the quality of the underlying groundwater; e) To protect groundwater resources, in accordance with statutory requirements and specific measures as set out in the National River Basin Management Plan 2022-2027;

	f) To work with and support Uisce Éireann, the Group Water Scheme Sector and LAWPRO in identifying public drinking water sources vulnerable to climate change and develop source protection or alternative sources, in order to maintain water quantity and quality levels; g) To consider proposals for development which infringe on a river boundary, or an associated habitat, including their connection by groundwater, only where it can be clearly demonstrated that: • The character of the area will be conserved; • An acceptable physical riparian zone will be maintained; and, • There will be no deterioration of water body status; h) To work with Uisce Éireann to find a sustainable and long-term solution for the production, minimisation and beneficial reuse of water sludge as a by-product in order to minimise risk to human health and the environment.
Objective CDP 11.44	To promote and facilitate the sustainable development, maintenance and upgrading of electricity and gas network grid infrastructure, to integrate renewable energy sources, thereby creating a secure and efficient energy supply and storage system for County Clare which is ready to meet increased demand as the regional economy grows
Objective CDP 11.47	a) To encourage and to favourably consider proposals for renewable energy developments, including community owned developments, and ancillary facilities in order to meet National, Regional and County renewable energy targets, and to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy; b) To assess future renewable energy-related development proposals having regard to the Clare Renewable Energy Strategy 2023-2029 in Volume 5 of this plan and associated SEA and AA; c) To support the sustainable development of renewable wind energy (onshore and offshore) at appropriate locations and of its related grid infrastructure in County Clare, in accordance with all relevant policies, guidance and guidelines pertaining to the protection of the environment and protected habitats and species, and to assess proposals having regard to the Clare Wind Energy Strategy in Volume 6 of this plan and the associated SEA and AA, or any subsequent updated adopted strategy and to National Wind Energy Guidelines; d) To prepare a new and updated Wind Energy Strategy for County Clare during the lifetime of this plan, subject to the publication of the update to the Wind Energy Development Guidelines for Planning Authorities 2006; e) To strike an appropriate balance between facilitating renewable and wind energy-related development and protecting the residential amenities of neighbouring properties; f) To support and facilitate the development of new options and technological advances in relation to renewable energy production and storage, that may emerge over the lifetime of this plan; g) To support the integration of indigenous renewable energy production and grid injection; h) To ensure that all proposals for renewable energy developments and ancillary facilities in the county are in full compliance with the requirements of the SEA and Habitats Directives and objective CDP 3.3 of this plan; and, i) To promote and market the county as a leader of renewable energy provision.

• Chapter 14 – Landscape

Objective CDP 14.2	To permit development in areas designated as 'settled landscapes' to sustain and enhance quality of life and residential amenity and promote economic activity subject to: I. Conformity with all other relevant provisions of the Plan and the availability and protection of resources;
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	II. Selection of appropriate sites in the first instance within this landscape, together with consideration of the details of siting and design which are directed towards minimising visual impacts; III. Regard being had to the need to avoid intrusion on scenic routes and on ridges or shorelines. Developments in these areas will be required to demonstrate:- a) That the site has been selected to avoid visual prominence, b) That the site layouts avail of existing topography and vegetation to reduce visibility from scenic routes, walking trails, water bodies, public amenities and roads. c) That design of buildings and structures reduces visual impact through careful choice of forms, finishes and colours, and that any site works seek to reduce visual impact.
Objective CDP 14.7	a) To protect sensitive areas from inappropriate development while providing for development and change that will benefit the rural community; b) To ensure that proposed developments take into consideration their effects on views from the public road towards scenic features or areas and are designed and located to minimise their impact; and c) To ensure that appropriate standards of location, siting, design, finishing and landscaping are achieved.

• Chapter 15 – Biodiversity, Natural Heritage and Green Infrastructure

Objective CDP 15.3	a) To afford the highest level of protection to all designated European sites in accordance with the relevant Directives and legislation on such matters; b) To require all planning applications for development that may have (or cannot rule out) likely significant effects on European Sites in view of the site's Conservation Objectives, either in isolation or in combination with other plans or projects, to submit a Natura Impact Statement in accordance with the requirements of the EU Habitats Directive and the Planning and Development Act, 2000 (as amended); and c) To recognise and afford appropriate protection to any new or modified SPAs or SACs that are identified during the lifetime of this Development Plan through the planning application process bearing in mind proposals for development outside of a European site may also have an indirect effect.
Objective CDP15.12	a) To protect and promote the sustainable management of the natural heritage, flora and fauna of the County both within protected areas and in the general landscape through the promotion of biodiversity, the conservation of natural habitats, the enhancement of new and existing habitats, and through the integration of Green Infrastructure (GI), Blue Infrastructure and ecosystem services including landscape, heritage, biodiversity and management of invasive and alien species into the Development Plan; b) To promote the conservation of biodiversity through the protection of sites of biodiversity importance and wildlife corridors, both within and between the designated sites and the wider Plan area; c) To support the implementation of the All Ireland Pollinator Plan, National Biodiversity Action Plan and National Raised Bog SAC Management Plan; d) To ensure there is no net loss of potential Lesser Horseshoe Bat feeding habitats, treelines and hedgerows within 2.5km of known roosts; e) To implement and monitor the actions as set out in the Clare County Biodiversity Plan; and f) To promote biodiversity net gain in any new plans/projects/policies to promote development that leaves biodiversity in a better state than before.

9.24. Other Relevant Policies

9.25. The CCDP contains a range of other policy objectives, development management guidelines and technical standards across a number of topics. These are all noted.

Table B: Other Relevant Policies CCDP.

Chapter/Objective	Title
Chapter 6 Objective CDP 6.17	Economic Development & Enterprise Energy Supply
Chapter 8 Objective CDP 8.12	Rural Development & Natural Resources Renewable Energy Development
Chapter 9 Objective CDP 9.6, 9.8, 9.10, 9.23	Tourism Tourism Corridors, Activity and Adventure Tourism, Rural Tourism and Forestry Tourism, Tourism in East Clare.
Chapter 10 Objective CDP 10.11, 10.12	Sustainable Communities Recreational routes, countryside recreation.
Chapter 14 Objective CDP 14.1	Landscape Landscape Character Assessment
Chapter 15 Objective CDP 15.1, 15.10, 15.14, 15.16, 15.18 & 15.19	Biodiversity, Natural Heritage and Green Infrastructure. Biodiversity, Environmental Impact Assessment, Habitat Fragmentation and Green Infrastructure Corridors, Inland Waterways and Rive Corridors, Peatlands and Woodlands, Trees & Hedgerows.
Chapter 16 Objective CDP 16.1	Architectural, Archaeological and Natural Heritage Architectural Heritage
Appendix 1	Development Management Guidelines A1.2.3 (renewable energy), A1.3, A1.6.2 (sight distances), A1.6.4 (TIA, RSA), A1.10.1 (development contributions), A1.10.2 (deposits & bonds).
Appendix 5	Scenic Routes

9.26. Volume 5 – Clare Renewable Energy Strategy, 2023-2029 (“CRES”)

9.27. The CRES outlines the renewable energy resource that is deliverable within County Clare. Its vision is consistent with the CCDP and seeks to position the County as the national leader in renewable energy generation and assisting Ireland’s Climate Action Plan. A progress review of the 2014 CRES found that by 2020 153MW of onshore wind energy had been installed which fell short of the original target of 500MW. The Strategic Aims of the Strategy, include:

- To support the attainment of and to exceed in County Clare, where possible, the National targets and commitments to renewable energy.
- To maximise the opportunities for renewable energy development whilst safeguarding the environment and existing residential amenities.

- To safeguard, where appropriate, areas with potential for renewable energy projects and to guide renewable energy development to preferred locations.
- To provide a clear development management framework.

9.28. Chapter 6 deals with onshore wind, however this is a summary of the Clare Wind Energy Strategy (“WES”) which is discussed in the following section of this report.

9.29. It is important to note that the CRES sets out the Council’s objectives until 2030 and the key date for Ireland to meet assigned national, European and international targets for renewable energy generation. The renewable energy resource target for County Clare for 2030 is 1,219.6MW of which 550MW is targeted from onshore wind (Table 1.1 of the CRES refers).

9.30. Volume 6 - Clare Wind Energy Strategy (“WES”)

9.31. The 2005 Clare Wind Strategy utilised the County Landscape Character Assessment (“LCA”) and designated areas of the County as ‘preferred’, ‘open for consideration’ and ‘no-go’ based primarily on landscape and visual considerations at that time. The 2005 Strategy was revised as part of the process to prepare the Clare County Development Plan, 2011-2017 and to achieve a balance between landscape and visual considerations and energy security, national and international emissions targets and environmental considerations. The 2011-2017 WES was subsequently adopted as Vol.5 of the 2011-2017 CCDP and included designated areas as being: a) ‘Strategic’, b) ‘Acceptable in Principle’, c) ‘Open for Consideration’ and d) ‘Not normally Permissible’.

9.32. The current 2023-2029 WES confirms that in accordance with the Department of Environment, Community and Local Government (“DECLG”) Circular PL20-13 the previous WES of 2011-2017 and 2017-2023 was not reviewed and has been adopted as Volume 6 of the current CCDP.

9.33. The WES sets out how it has been informed by International, national and local policy and has been crafted to respond to climate change obligations and renewable energy targets. The methodology used in the preparation of the Strategy is set out, particularly how regard has been had to, inter alia: energy requirements; the available wind resource; transmission network, proximity to residential property,

landslide susceptibility, the LCA, the Strategic Environmental Assessment “SEA” and Habitats Directive Assessment “HDA” processes, and consideration of alternatives in identifying appropriate designations. The WES sets out seven general objectives for wind energy development and five specific area objectives, together with advice on landscape capacity for wind energy development based on the LCA.

9.34. The following general objectives are noted:

WES One: “It is the objective of the Council to support, in principle and in appropriate scales and locations, the development of wind energy resources in County Clare. It is an objective of the Council to ensure the security of energy supply by accommodating the development of wind energy resources in appropriate areas and at appropriate scales within the County.”

WES Four: “The White Paper on Energy has set a target of 40% of electricity to be generated from renewable sources by 2020. In the Mid-West Regional Climate Change Strategy, County Clare is identified as having a potential 600MW energy produced from renewables by 2020. Clare County Council will aim to achieve a minimum target of 550MW from wind energy by the conclusion of this Strategy.”

WES Five: “Clare County Council will seek to promote community involvement and require community benefit where possible in Wind farm developments”.

WES Six: “Proposals for the development of infrastructure for the production, storage and distribution of electricity through the harnessing of wind energy will be considered in appropriate sites and locations, subject to relevant policy, legislation and environmental considerations.”

WES Seven: “Having regard to the provisions of the Habitats Directive 92/43/EEC, where a proposed development will give rise to significant adverse direct, indirect or secondary impacts on Natura 2000 sites, (either individually or in combination with other plans or projects), permission will only be granted where there is no alternative solution and where there are imperative reasons of overriding public interest in favour of granting permission, including those of a social or economic nature.”

9.35. The subject is within an area designated as being ‘Open to Consideration’ in the WES. In these areas it is **Objective Ten** of the WES that:

“Wind energy applications in these areas will be evaluated on a case-by-case basis subject to viable wind speeds, environmental resources and constraints and cumulative impacts.”

- 9.36. In terms of landscape capacity, the subject site is located within the ‘Slieve Bernagh Uplands’ Landscape Character Area. Table 4a of the WES describes this area as having ‘medium to low’ sensitivity to windfarm developments and states that the appropriate size of wind farms (turbine numbers) in this area is ‘large’. The capacity is described as follows:

“There are certain parts of this LCA that are highly sensitive due to their nature designations and scenic qualities. In particular the foothills and mountains overlooking Lough Derg and the unenclosed bogs of Lackerragh and Glenvagalliagh Mountain. However, other areas on the north west and westerly aspects of the mountain are more robust and can accommodate a number of large or medium windfarms. In the Broadford Hills areas, the areas around Woodcock Hill, Ballycar, Corlea and Knockaunnamoughilly are identified as Strategic Areas. Potential Renewable Energy Generations for this area is 150MW.”

9.37. Natural Heritage and European Designations

- 9.38. The Slieve Bernagh Bog Special Area of Conservation (SAC)(Site Code: 002312) adjoins the northwestern boundary of the site. Otherwise, this large European Site is generally located in close proximity to the northern boundary of the subject site.
- 9.39. The Board may wish to note that whilst the proposed development does include for a Biodiversity Enhancement & Management Plan (“BEMP”) this is located within the boundaries of the subject site.
- 9.40. The Turbine Delivery Route is via local, regional, motorway and national roads from Foynes Port. This route is located along existing roads which traverse, abut or in close proximity to the following sites:
- Lower River Shannon Special Area of Conservation (SAC)(Site Code: 002165). (Road crossing at Killaloe/Ballina, on the M7 and on the N69 in the vicinity of Limerick City and at Foynes).

- Askeaton Fen Complex Special Area of Conservation (SAC)(Site Code: 002279). (On the N69).
- Curraghchase Woods Special Area of Conservation (SAC)(Site Code: 000174). (On the N69)
- Barrigone Special Area of Conservation (SAC)(Site Code: 000432). (On the N69)
- Inner Shannon Estuary proposed Natural Heritage Area (pNHA) (Site Code: 000435) at Foynes.

9.41. The Grid Connection Route is via local and regional roads which traverse or abut the following site:

- Glenomra Wood Special Area of Conservation (SAC)(Site Code: 001013).

9.42. National or European sites generally in the vicinity of the site (<15km) are as follows:

- Slieve Bernagh Bog Special Area of Conservation (SAC)(Site Code: 002312). This site adjoins the subject site to the north.
- Doon Lough Natural Heritage Area (NHA)(Site Code: 000337). This site is approx. 5km to the west.
- Lower River Shannon Special Area of Conservation (SAC)(Site Code: 002165). This site is approx. 4.6km to the southeast.
- Lough Derg Special Protection Area (SPA)(Site Code: 004058). This site is approx. 5.3km to the east.
- Lough Derg proposed Natural Heritage Area (pNHA)(Site Code: 000011). This site is approx. 5.6km to the east.
- Glenomra Wood Special Area of Conservation (SAC)(Site Code: 001013). This site is approx. 4km to the south-south-east.
- Gortacullin Bog Natural Heritage Area (NHA)(Site Code: 002401). This site is approx. 5.8km to the southeast.
- Danes Hole, Poulnalecka Special Area of Conservation (SAC)(Site Code: 000030). This site is approx. 8.4km to the east.

- Cloonloun More Bog Natural Heritage Area (NHA)(Site Code: 002307). This site is approx. 9.6km to the west-north-west.
- Woodcock Hill Bog Natural Heritage Area (NHA)(Site Code: 002402). This site is approx. 12.8km to the southeast.
- Loughanilloon Bog Natural Heritage Area (NHA)(Site Code: 001020). This site is approx. 9.485km to the northwest.
- Slieve Aughty Mountains Special Protection Area (SPA)(Site Code: 004168). This site is approx. 11.7km to the north at its closest point.
- Ayle Lower Bog Natural Heritage Area (NHA)(Site Code: 000993). This site is approx. 11.5km to the northwest.
- Knockalisheen Marsh Proposed Natural Heritage Area (pNHA)(Site Code: 002001). This site is located approx. 12.2km to the southeast.
- Slievefelim to Silvermines Mountains Special Area of Conservation (SAC)(Site Code: 004165). This site is approx. 13km to the southeast.
- Kilkishen House Special Area of Conservation (SAC)(Site Code: 002319). This site is approx. 13.4km to the west.

10.0 EIA Screening

10.1. The proposed development is a type of development which falls within Class 3(i), Part 2, Schedule 5 of the Planning and Development Regulations, 2001, as amended, and requires environmental impact assessment.

Class 3(i), Part 2, Schedule 5 *'Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts'.*

11.0 The Appeal

11.1. Grounds of Appeal

A first party appeal was received from MKO on behalf of EDF Renewables Ireland Limited against the decision made by Clare County Council to refuse planning permission for the proposed development. An oral hearing is not requested. The appeal includes the following:

- a First Party Appeal Report,
- Appendix 1: CCC Notification of Decision to Refuse Permission
- Appendix 2: Hydro-Environmental Services Appeal Response
- Appendix 3: CCDP 2023-2029 Compliance Summary Table.

11.2. The First Party Appeal Report sets out observations on the Planning Authority's assessment, including its AA and EIA conclusions, and the grounds of appeal against each of the reasons for refusal. This is summarised in turn in Table CA & B below:

Table CA & B – First Party Observations of Planning Authority’s EIAR & AA Conclusions and Grounds of Appeal in response to the PA’s decision to refuse planning permission for 3 no. reasons.

Table CA - First Party Observations on the Planning Authority’s EIAR & AA Conclusions	
Ground: Cumulative Impact Assessment Methodology	
PA Assessment	First Party Response
The identification of cumulative effects with 2no. windfarms based on a cumulative hydrological study area is conservative. It does not appear to take into account noise or disturbance effects to birds which would most likely have identified further windfarms as having potential to cumulative ad in-combination effects.	The PA appears to have misinterpreted the cumulative impact assessment approach in the EIAR. The methodology is detailed in Section 2.9 of Chapter 2. The geographical boundaries of various zones of sensitivity of, and to, the project from which there may be potential for cumulative impacts to arise in relation to each individual EIAR topic is presented in Table 2-9. For Birds, following NatureScot guidance ‘Assessing the Cumulative Impacts of onshore Wind Energy Developments’ (SNH, 2018), a 25km radius was considered a reasonable approximation of the size of a county and a 5km radius for the local level.
Ground: Population and Human Health (Shadow Flicker)	
The Council expressed concern that of the 64 properties evaluated, 45 may experience daily shadow flicker, with properties potentially exceeding maximum daily allowances without mitigation and 5 properties potentially affected by cumulative shadow flicker with Fahey Beg. This was considered a significant risk to residential amenities.	The applicant is committed to bringing the proposed development in line with the Draft 2019 Guidelines requirement of zero shadow flicker through mitigation strategies. Mitigation measures outlined in Section 5.10.3.10 will ensure no occurrences of shadow flicker for any property within the 1.55km Study Area and no contributions of shadow flicker occurrences from the proposed development at the 5 properties with potential for cumulative shadow flicker occurrences with the Fahy Beg Windfarm. There will be no residual effect on human health from shadow flicker.
Ground: Population and Human Health (Residential Amenity)	
The noisiest activities are excavation and pouring of turbine bases and the	The impact of the proposed development on residential amenity is detailed in Section 5.9, 5.10.2.12 and 5.10.3.11 of the EIAR, and is derived from an overall judgement of the combination of impacts. Following implementation of

impacts of construction phase noise are underestimated. Noise effects arising from extraction at the borrow pit are not considered. Traffic movements associated with concrete pouring appear 'intense'. Consideration of economic impacts is inadequate, with potential negative impacts on small scale local businesses and the local tourism economy not considered or assessed. The potential impact of the proposed development, particularly during construction, on walking, cycling and recreational activity is not assessed. Whilst potential for devaluation of property is considered, there is no attempt to analyse impacts on the attractiveness of the receiving area as a place of residence.	mitigation, the residual effect on residential amenity during construction is short-term negative and imperceptible and during operation it is considered that there will be no residual effect. It is not considered that the proposed development will have a significant effect on tourism, renewable energy developments are an existing feature in the landscape and will assist assimilation. There is potential for long-term imperceptible negative impacts at operational stage on the East Clare Way. The design includes look out point areas and signage which provide a safe visitor experience encouraging locals, tourists and trail runners. Traffic management will ensure access is retained during construction in a safe manner. There is potential for slight negative impacts on property values but with mitigation the residual effects are imperceptible. The area is not zoned for residential development, and this is not envisaged by the CCDP. The proposed community benefit scheme is also referenced with regards to economic impact.
Ground: Biodiversity	
The documents do not provide a comparison of where bat species were recorded through transect surveys, hedgerows proposed for removal and proposed replanting. Linear features are critical to this species in terms of retaining connectivity across the landscape. There is potential for indirect impacts through the loss of linear foraging features and this has not been addressed in the EIA.	EIAR Appendix 6-2 (Bat Report) and summary in Section 6.5.2.2.3 of Chapter 6 refers. The loss of linear features is approx. 10% of trees and hedgerows within the site. This is a limited percentage of available commuting and foraging habitat. The hedgerows forming field boundaries proposed for removal to facilitate road widening works consist of low, gappy features assessed as having low suitability for commuting and foraging bats during the bat habitat appraisal. The transect surveys, which focussed on potential areas to be lost, confirmed this initial assessment with limited activity recorded. The rest of lost features on sections of regional road are not anticipated to fragment connectivity across the site and beyond. Given the significant areas of habitat remaining undisturbed, the avoidance of significant areas of faunal habitat, the limited spread and quality of features lost, no significant effects on bat species (including lesser horseshoe bats) have been identified. More suitable habitats are retained by design, scrub in proximity to Kilbane Stream was considered one of the most suitable features present on site due to its north-south connectivity and the foraging potential of scrub and riverine

The proposed Curtailment Strategy reduces, but does not exclude, the potential for collision risk given the high local importance of the site for various bat species. There is no assessment of crossover in foraging ranges or impacts associated with the construction of so many windfarms within this area.	habitats, as such enhancement efforts are focused in this area. The Biodiversity Management and Enhancement Plan (BMEP) proposes to bolster suitable hedgerow to improve quality and significance to bats by adding approx. 2,673m of planting within the site. Four species were recorded at high-risk of collision (Leisler's bat, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle). A bat mitigation and monitoring plan includes for curtailment at two turbines on a precautionary basis given high activity levels of one or more species at these locations. Curtailment is proposed with other mitigation including avoidance of suitable habitat by design, lighting restrictions, buffering, blade feathering, habitat replating and adaptive monitoring and this wider context needs to be considered. No significant effect at any geographical level on bats is anticipated following mitigation. It is likely that the foraging ranges of bats recorded overlap with nearby windfarms. It is concluded that there will be no significant residual impacts on bats associated with the proposed development, therefore it cannot contribute to any significant cumulative effect when considered in-combination with other plans and projects. The reported residual impacts from other plans and projects in the area were considered. The windfarm projects in proximity to the proposed development are small to medium in scale, have reported minimal residual effects on bats following mitigations and therefore no significant residual cumulative impacts have been identified.
Ground: Land, Soils & Geology	
The location of the settlement pond to manage run-off from the borrow pit is not identified and no design specification has been provided. It is difficult to see how or where this could be located. There is a considerable risk in the context of major accidents and emergencies should a type of "bog burst" occur after excessive rainfall (for e.g.) with potential for irreparable damage to downstream water quality.	Detailed drainage design drawings which include drainage design for the borrow pit, siting and design detail of settlement ponds was provided as part of the planning application drawing pack and as detailed in Appendix 8-4 of the EIAR.
Ground: Climate	
The use and potential impacts of SF6 Insulation Gas in the turbine, and any potential leakage has been assessed.	The assessment of the release of hydrocarbons has been adequately addressed in the EIAR, Chapter 6, 8 and 9.

In the decommissioning phase an assessment of the carbon footprint and embodied carbon of in-situ turbine foundations has not be undertaken. It is noted that the Council's Environment Section considered the assessment of climate issues in the EIAR to be generally acceptable.	The calculation of the turbine life cycle emissions is considered and the results presented in Appendix 11-1 of the EIAR: Carbon Calculations. This includes the decommissioning phase and the embodied carbon of reinforced concrete in turbine foundations.
Ground: Noise and Vibration	
The PA was not satisfied that noise related impacts of the construction or operational phase were adequately addressed or mitigated and held concerns in relation to construction noise impacts on residential amenity. The PA concurred with NEHS that further assessment is required. Concerns can be summarised as follows: • The suitability of 2006 Guidelines in setting appropriate noise limits for cumulative noise versus BS 414:2012+A1:2019¹ or WHO 2018 Environmental Noise Guidelines for the European Region. • Issues with methodology with the implication that assessing against	A detailed response is given, which is summarised under the following headings: Wind turbine noise limits and assessment methodology: <i>(Operational Noise Assessment for the Proposed Development)</i> The operational noise assessment presented in EIAR Appendix 12-2 considered cumulative wind turbine noise impacts in detail. It concluded that subject to mitigation, including operating turbines in low noise modes (restricting rotor speed), predicted cumulative noise levels would comply with limits set in the 2006 Guidelines. The 2006 Guidelines are the current guidelines setting noise limits for wind energy developments. They broadly align with the UK Guidance ETSU-R-97 'the Assessment and Rating of Noise from Wind Farms'³. In 2013 the UK guidance was supplemented by the Institute of Acoustics 'A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise'⁴ (IOA GPG). Therefore, the operational noise assessment refers to the aforesaid UK guidance as supplemented in addition to the 2006 Guidelines. This approach is consistent with recent Board decisions including: ABP-317227-23 (Fahy Beg), 316025-23 and 318704-23. Within the operational noise assessment, noise limits are set at 5 dB above existing background noise levels but are subject to a fixed minimum limit when background noise is low. The concept of fixed minimum limits is discussed in ETSU-R-97 which states that applying the margin above background in some very quiet areas would imply setting noise limits down to 25-30 dB(A) which would be very restrictive and that it is not necessary to restrict noise below

¹ British Standards Institute, Methods for Rating and Assessing Industrial and Commercial Sound, UK:BSI,2014.

³ ETSU for the DTI (Department of Trade and Industry). "The Working Group on Noise from Wind Turbines ETSU-R-97 The assessment and Rating of Noise from Windfarms", 1996.

⁴ Institute of Acoustics, "Good Practice Guidance on the application of ETSU-R-97 for wind turbine noise assessment," 2013

BS 5228:2009+A1:2014² was not appropriate due to the adoption of a daytime noise threshold of 65 dB(A)_{L_{Aeq,T}}. • Vibration predictions for construction and operational period were not presented. • Concerns in relation to the enforceability of noise conditions in respect to Other Amplitude Modulation (OAM) and a community liaison officer should complaints arise.	certain fixed limits. ETSU-R-97 then goes on to consider appropriate fixed minimum limits at nighttime and conclude that an appropriate fixed limit is 43dB(A), which was also adopted in the 2006 Guidelines. Neither the 2006 Guidelines nor ETSU-R-97 include a maximum allowable difference when background noise levels are low. Therefore, the appropriate test to be applied is whether noise meets the proposed limits, incorporating the appropriate fixed minimum limits. <i>(Impact assessment using WHO Noise Guidelines for the European Region, 2018)</i> The WHO Guidelines make recommendations in relation to each noise source considered (road, rail, aircraft, wind turbines and leisure), with each recommendation rated as 'strong' or 'conditional'. The recommendation for wind turbine noise is conditional which '<i>requires a policy making process with substantial debate and involvement of various stakeholders. There is less certainty of its efficacy owing to lower quality of evidence of a net benefit, opposing values and preferences of individuals and populations affected or the high resource implications of the recommendation, meaning there may be circumstances or settings in which it will not apply.</i>' The recommendations for wind turbine noise in the WHO Guidelines are expressed as L_{den} and L_{night} which are different to the 2006 Guidelines. The WHO Guidelines do not make a recommendation in relation to L_{night}. The L_{den} is not currently used in Ireland for the prediction, measurement or assessment of wind turbine noise and this is reflected in the 2006 Guidelines as it is considered that the metric may be a poor characterisation of wind turbine noise and may limit the ability to observe associations between turbine noise and health outcomes. No changes have been made to the 2006 Guidelines, ETSU-R-97 or IOA GPG in response to the WHO Guidelines and the assessment of operational wind turbine noise against the 2018 WHO Guidelines is not appropriate or necessary. <i>(Impact Assessment using BS 4142:2014+A1:2019)</i> BS 4142 is not an appropriate assessment method for evaluating wind turbine noise and this is discussed within ETSU-R-97 under the heading 'problems with interpretation and the literal application of BS 41421'. Whilst the ETSU document refers to an older version of BS 4142 than that currently in use, the following should be noted: • The standard is intended for assessment of noise at low wind speeds and an assessment of wind farm noise should be conducted at speeds above those considered in BS 4142. • There is no method to set noise level limits in BS 4142 • BS 4142 itself states that the standard is not intended to be applied to the rating and assessment of sound from other sources falling within the scope of other standards and guidance.
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² British Standards Institute, Code of Practice for noise and vibration control on construction and open sites. Noise, UK:BSI, 2014.

	In conclusion NEHS has misinterpreted the guidance presented in BS 4142 and it is not appropriate for use in determining the significance of impacts from wind turbine noise. Construction Noise limits and assessment methodology: The PA indicates concerns with the construction noise assessment and implies that use of BS 5228 was not suitable. The Construction noise assessment has been undertaken in accordance with BS 5228:2009+A1:2014. There is no published statutory Irish Guidance that contains noise limits for construction activities other than a 2014 NRA document which relates to road developments only. The Association of Acoustic Consultants Ireland have published 'Environmental Noise Guidance for Local Authority Planning & Enforcement Departments' which states that the chief guidance document applied in the assessment of construction phase impacts is British Standard BS 5228:2009+A1:2014⁵. A summary of modelled construction scenarios is presented in Table 5.1 of Appendix 12-1 with a detailed description in Annex 2 of the said Appendix. This includes rock breaking at the borrow pit. Rock breaking at the turbine hardstands has not been assessed as no explicit requirement for this is identified. The noise predictions are worst case predictions assuming all plant is operating 100% for the full time period. In actuality, the predicted levels would be lower when the intermittency of operation is considered. The PA compares predicted noise levels, which are LAeq values, with background noise levels, which are LA90 values. This is inappropriate and the BS6228 assessment method considers existing ambient sound levels in the area and not background sound levels. Vibration Assessment: Vibration associated with the operation of the proposed development was discussed in Section 12.6.2 of Chapter 12 of the EIAR. This identified that due to separation distances no significant effects are anticipated. Similarly with construction noise, good practice will be implemented, and impacts are deemed not significant. Where construction activities associated with the proposed Grid Connection Route are close to residential receptors, some local vibration effects may be present, but they are expected to be low and of limited duration. As vibration from typical construction activities would only ever be noticeable if activity was occurring within a few metres of a property, a detailed assessment was deemed unnecessary. Complaints due to Other Amplitude Modulation (OAM): As discussed in Section 3.3 of Appendix 12-2 of the EIAR there is no method available to predict OAM and the imposition of a planning condition is at odds with advice in the IOA GPG which states that current advice is not to assign a planning conditions to deal with OAM. The recent decisions of the Irish Court support this position. OAM can be mitigated, but mitigation measures are always site specific and cannot be pre-empted. Where required this
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⁵ British Standard BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites Part 1: Noise' (2014)

	needs to be designed on a site-specific basis and therefore the employment of a community liaison officer is proposed so that this process can be expedited if noise complaints arise. If a 'neighbour' considers mitigation inadequate, it is not without remedy, with the appropriate forum being court proceedings.
Ground: Material Assets – Traffic &Transport	
The PA's assessment expresses the following concerns: • Uncertainty in relation to the route that will be used to transport stone to the site and the failure to assess the movement of large volumes of HGV's through Broadford Village. The PA considers the concrete requirements for turbine foundations to be underestimated and simultaneously that traffic movements associated with concrete pouring appear 'intense'. • Pedestrian and cyclist safety during construction. • Cumulative construction phase effects on road users has not been adequately addressed and the co-ordination of deliveries, de-forestation, roadworks and junction improvements together with account of ecological constraints and agricultural activities is a serious concern. • The PA notes the road and junction improvement works which must be	Deliveries of Stone and Ready-Mix Concrete from Quarries: As described in Section 4.5.2. in Chapter 4 of the EIAR all stone material will be sourced onsite as the proposed borrow pit and cut exercise have capacity to supply the projects requirements. Under a precautionary scenario minor quantities of specific stone or hardcore may be required and it is identified that these materials, along with ready-mix concrete will be sourced from nearby appropriately licenced quarries. For the purposes of assessment an existing, authorised quarry Stone Direct, located approx. 5km to the west, was identified with the proposed route for HGV's originating near Broadford Village. However, the traffic and transport assessment emphasises that a precautionary approach is taken to the assessment of traffic generation which assumes that deliveries come from one of 2 no. directions, the TDR or in the case of general construction materials and concrete, via the R466 from the west in the direction of Broadford, with the maximum increase in traffic volumes assessed on each link. As identified in Section 15.1.4.2 for the purpose of traffic impact assessment, projections based on trip generation data collected from other windfarm construction projects were made to inform the assessment. With regard to the PA query that 80 concrete loads is a low value for concrete pouring for total turbine foundations, it is clarified that the PA has misinterpreted the information provided which is 80 concrete loads per turbine. This will result in one turbine foundation pour per day over seven days with 7 HGV movements to and from the site per hour over a 12-hour period. With regard to the PA opinion that these traffic movements are 'intense', Section 15.1.12.2.1 of the EIAR identifies that the effect on the road network will be temporary negative with the impact forecast to be slight. Road Safety: As identified in Section 15.1.10 a Stage 1 Road Safety Audit was undertaken and is included in Appendix 15-4 of the EIAR. In relation to users of the East Clare Way walking trail the RSA recommends rigorous temporary traffic management measures to minimise risk of conflicts between construction vehicles and other local traffic, especially walkers. The Design Team Response confirms comprehensive traffic management measures will be put in place including signage and 'flagmen' and this is accepted by the Audit Team. Cumulative Effects on Traffic and Traffic Management Plan: Significant co-ordination, planning and a comprehensive set of mitigation measures will be put in place before and during construction, including a detailed final Traffic Management Plan (TMP) to be agreed with the LA and An

undertaken in advance of development, including tree felling. The PA states that the Traffic Management Plan set out in Appendix 15-2 does not add any significant additional information to the main EIAR assessment.	Garda Siochána. This will include active engagement and consultation with the community and contact arrangements. The potential for cumulative impacts is assessed in Section 15.1.12.7 of the EIAR. The final Traffic Management Plan will identify a schedule that is cognisant of other construction works or TMPs before the LA at that time. In any event, if developments overlap, the EIAR establishes that cumulative impacts of this scenario to be negative, short-term and slight to moderate based on overlap of TDR's and traffic generation. 10 developments were considered in the context of traffic related cumulative impacts. These are set out on Table 15-28 of Chapter 15 of the EIAR and the potential risk of cumulative impacts is assessed as low to medium with the resulting cumulative impacts being negative, short term and slight for all cases. It is considered that a comprehensive assessment of cumulative traffic and transport impacts is presented in the EIAR.
Table CB - First Party Grounds of Appeal	
Refusal Reason	Grounds of Appeal
Refusal Reason No.1 The proposed development is located in the Slieve Bernagh Bog Landscape Character Area (LCA) and in an area where wind farm developments are 'Open to Consideration' on a case by case basis subject to viable wind speeds, environmental resources and constraints, and cumulative impacts in accordance with Objective WES10 of the Clare Wind Energy Strategy. Having regard to the location of the site in a more sensitive and scenic area of the LCA (Lackareagh and Glenvagalliagh Mountains) it was considered that the proposed turbines by reason of their height (up to 180m), scale and siting on open, exposed and sensitive upland landscape would constitute a prominent	The authors of this appeal response and their competencies are set out. It refers to the comprehensive Landscape Visual Impact Assessment (LVIA) set out in Chapter 13 of the EIAR and the associated photomontage booklet and appendices. The appeal response is structured into two headings, each with sub-headings. They can be summarised as follows: Refusal Point 1 LVIA Topics <i>(Sensitivity and Scenic Amenity of Slieve Bernagh Uplands LCA-8)</i> It is clarified that the name of the relevant LCA is 'Slieve Bernagh Uplands LCA' and not 'Slieve Bernagh Bog LCA' as cited by the PA. The sensitivity of Slieve Bernagh Uplands ("LCA 8") is reported by the WES to be 'medium to low', thus the use of 'more sensitive' wording by the PA is not reflective of the correct policy position. In relation to the PA assessment position that the development site is on lands '<i>which are identified as highly sensitive</i>', the appellant does not agree. It is opined that this is a misreading of the related policy and that the only two special circumstances under which the sensitivity of LCA8 must be considered '<i>highly sensitive</i>' are in cases of development impacting '<i>the mountains overlooking Lough Derg</i>' or '<i>the unenclosed bogs of Lackareagh and Glengalliagh Mountain</i>'. The LVIA emphasises that the proposed turbines have no theoretical visibility from the mountains on the western edge of Lough Derg and from certain elevated areas on the eastern shore of Lough Derg low to partial theoretical visibility is indicated. The proposed development is otherwise not located within enclosed bogs, but to the contrary in commercial forestry or low-intensity agricultural lands subject to a high degree of

feature from local and long range views and would seriously injure the amenities of the area including negatively impacting on the R466 Regional Road which is a designated scenic road. Having regard to the foregoing and the significant potential for cumulative impacts arising with permitted and proposed wind farm development in the surrounding area it was considered that the proposed development would contravene objectives CDP 14.2 and 14.7 of the Clare County Development Plan, 2023-2029 (“CCDP”) and would be contrary to the proper planning and development of the area.	modification. Otherwise, it is stated that the sensitivity of the unenclosed bogs is derived from ecological value and not visual characteristics. The appellant further clarifies that the location of the subject site is not a protected landscape designated by the CCDP, such areas are limited to designated ‘Heritage Landscapes’, and the LVIA demonstrates that the proposed development does not affect the sensitivities of the identified Heritage Landscapes within the 20km LVIA study area. The LVIA reports that the development is located in a ‘settled landscape’ for which one of the CCDP envisioned uses is ‘energy’⁶. The appellant states that scenic amenity within the Glenomra Valley is protected in the form of views from the designated Scenic Route R466 and this is directly addressed below. Otherwise the appellant clarifies that the 2006 Guidelines provide that visibility of a wind energy development from a designated view or prospect does not automatically preclude an area from future wind energy development, but is a material assessment consideration. <i>(Scale and Siting of Turbines in Open and Exposed Upland Landscape):</i> This section of the appeal response addresses the following text from the refusal reason: ‘....the Planning Authority considers that the proposed turbine structures, by reason of their height (tip height up to 180m), scale and siting on this open, exposed and sensitive upland landscape....’ As asserted above, the sensitivity of the receiving landscape is ‘low to medium’ as classified by the CCDP and WES. It is not true that the turbines are sited in a specific location that affords open and exposed views. The LVIA, utilising ZTV mapping, clearly demonstrates very limited visual exposure from the majority of the 20km study area, including designated Heritage landscapes and most receptors outside of 5km reflecting the spatial enclosure of Glenomra Valley. It is also not true that the general setting of LCA 8 is an open and exposed landscape, and as a refusal reason this is contrary to the functional nature of basic windfarm design which must be exposed to wind. The height, scale and siting of the proposed turbines is functionally appropriate for good windfarm design and meets all appropriate guidance. The turbine height and siting with irregular spatial extent allows for appropriately scaled visual balance between the different landcover types present as reported in the LVIA. Furthermore, several key attributes and factors make upland landscapes suitable for wind energy development from an LVIA perspective: • They are typically of a large scale where commercial scale can be effectively absorbed; • Marginal areas regularly comprise environments modified by commercial activities and prove to be suitable for accommodating the physical infrastructure required for a wind energy development; • They are typically areas of low population density enabling appropriate set back distances; and
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⁶ CCDP p.348.

	• Strategic geographic siting of turbines in relation to well defined landforms and topographical features can substantially reduce the visual exposure of a wind farm. <i>(Prominence from Local and Long-Range Viewpoints):</i> In the relation to that part of the refusal reason which holds that the turbines would be prominent on the landscape from local and long range views, it is submitted that this position is not actually supported suggesting that the LVIA was either not consulted or was dismissed. The LVIA demonstrates that visual exposure is extensively limited to localised areas within 3-5km of the site and that vast areas of the 20km LVIA study area to the north and north-east have no visibility. This was informed by photomontage visualisations from 33no. viewpoints and evidenced by photowire visuals. In relation to prominence from local viewpoints, it is considered that the argument is improper and dismissive of the LVIA process. Turbines will naturally appear more prominent to local receptors in close proximity, but the appropriate question is whether or not they area out of scale in the chosen setting. In this regard design has been optimised to meet guidance on location, spatial extent, spacing, layout, height and cumulative effect. The LVIA determined negative impacts will be limited to a very low number of local receptors. The LVIA Route Screening Analysis also revealed that 82.93% of roads have ‘intermittent/partial’ to ‘dense/full’ visual roadside screening, thereby greatly reducing or eliminating actual visibility. Considering all these points, the assertion of ‘serious’ injury is not supported. <i>(Visibility from Designated Scenic Route R466):</i> The assertion that the proposed development will ‘dominate all views’ and ‘fundamentally alter’ the scenic landscape is unwarranted and the inclusion of these statements in the PA’s planning report indicate the LVIA was either not consulted or dismissed. The R466 is an 8.8km route between Bridgetown and Broadford Gap and was a key focus of the LVIA. Three viewpoints were assessed (VP04, VP07 & VP08), with the first two representing uncommon, worst case scenario views as per best practice. VP04 and VP07 were found to have ‘significant’ and ‘moderate’ visual effects respectively with the emphasis that these two points comprise a 2km stretch from which worst-case scenario views would be experienced. Effects from VP08 were found to be ‘not significant’. The LVIA shows that most of the R466 is visually screened, therefore the assertion that all views would be dominated is false. The assertion that the turbines are ‘highly visible’ applies only to a small portion of the route were the LVI reports that views of the turbines ranged from visually balanced to separated. The CCDP policy wording⁷ seeks to protect and conserve views adjoining public roads where they are of high amenity and states that this should not give rise
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⁷ CCDP Section 14.5, p.356

	to a prohibition on development which, if permitted, should not hinder or obstruct these views but be designed to minimise visual impact. The LVIA found that the development meets this policy test. <i>(Impact on Character of Rural Landscape):</i> The PA position that the development would negatively alter the character of this rural landscape, is vague. The proposed windfarm is located within a transitional type of landscape already highly modified by commercial forestry and low-intensity agriculture and is an appropriate type of landscape for wind energy development having regard to 2006 Guidelines. The LVIA assigns a landscape value of 'Low to Medium' and indicates that the susceptibility to change with respect of the project is 'Low' with overall sensitivity of 'Low'. The LCA 8 has also been designated with the lowest sensitivity rating to wind energy development by the CCDP. The EIAR LVIA found residual effects on landscape character ranging from 'imperceptible' to 'slight'. <i>(Compliance with Objectives CDP14.2 and CDP 14.7):</i> The appellant cites objective CDP 14.2 and CDP 14.7 of the CCDP and asserts that the proposed development would not contravene same on the basis of the aforesaid responding considerations. LVIA Topics from the CCC Planner's Report <i>(Cumulative impact with Permitted Fahy Beg Wind Farm):</i> The assertion that the combined visual impact of the Fahy Beg and Lackareagh Wind Farms would severely alter the character of the area of cause a severe visual impact is unwarranted. This is evidenced by the following: • The proposed turbines do not substantially contribute to cumulative effects, as only blades and blade tips will be visible directly behind the Fahy Beg Turbines (from the R466 scenic route); • Given that there is potential for effects on only a small portion of this route, and that the proposed turbines do not seriously hinder or obstruct views, there is little support for 'severe' cumulative landscape and visual effects as a result of both developments. • The issue of cumulative effects from VP15 in the River Ardclooney Valley (or Aillemore Area) as mentioned in the planners report is unfounded. The LVIA clearly reports, for VP15, that no existing or proposed wind farms are visible from this point, with graphic modelling supporting this position. • The issue of cumulative effects from the Gap Road (Killaloe to Kilbane) is also unfounded with the LVIA reporting primarily 'dense/full' screening, meaning there is no visibility of the proposed turbines from most sections of this road.
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	Overall, the assertion of potential for ‘significant’ cumulative landscape effects is considered false, indicating that the Project LVIA was not consulted or was dismissed. The LVIA concludes that the ‘Slieve Bernagh Uplands have the potential to reduce the extent of cumulative visual effects experienced by visual receptors in the area.....has the capacity to absorb the proposed project and will have limited significant cumulative or in-combination effects with other wind energy developments’. <i>(Prominence of Proposed Turbines T5 and T6 on Ridgeline)</i> The Planners report notes that T1 and T2 have the lowest level of visual impact due to a strong backdrop but considers T5 and T6 are exceptionally prominent from numerous vantage points due to their siting on /close to a ridgeline and are most prominent due to the extent that they break the skyline. The implication that permission should be refused on the basis of individual turbines having been assigned with a specific level of visual impact (lowest or prominent) is dismissive of the LVIA Process which evaluates the degree of impact with respect to the project has a whole having regard to landscape, geographical setting and the number and type of affected receptors. The design choices made optimise project design to achieve functionality in accordance with the 2006 Guidelines for the appropriate landscape character type. Considering best practice guidelines, it is generally preferable to view blades and hubs above the horizon so that moving components are viewed against the sky. This is a ‘Transitional Marginal Landscape’ comprising a mix of commercial forestry and low-intensity agricultural land where siting and design guidance states that wind energy developments will typically be located on ridges and peaks and a clear visual separation will be achieved from the complexity of lower ground. As shown in the LVIA T1-T4 are typically visible against simple landcover (mountain moorland or banks of forestry) and T5 and T6 above the horizon, thereby achieving visual separation from the complex agricultural lands of the lower valley. As mentioned previously T5 and T6 have a high degree of visibility from a short section of the R466 only with extensive visual screening in the River Ardcloony Valley to the east. In relation to the residential context the LVIA found only that the blades of T6 show from the eastern ridge and that the low number of residential receptors in the River Ardcloony Valley will be impacted to the greatest degree, with the visual effect being moderate. The LVIA concludes that ‘significant effects’ are extensively limited such that only a few receptors are affected by it. <i>(Representation of Landscape Changes by use of Photomontage Visualisation)</i> The Planner states that there is no visual representation of access roads, tree clearance, settlement ponds, swales etc and the landscapes changes which will occur, particularly at a local level are not represented. The LVIA has followed best practice methods and processes as summarised in the LVIA. An LVIA must be proportional, and it is not possible to show impacts from every receptor, therefore a key focus is on the aspects likely to cause significant landscape and visual effects. Regarding non-turbine infrastructure the LVIA deemed these to be less visually prominent but accepted that they may give rise to localised landscape and visual effects and therefore gave them consideration and assessment in the LVIA, the BMEP and Appendix 6-4 of the EIAR. This is evidenced by the
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	finding that the visual effects of access roads and hard stand areas are 'slight' given their flat nature, localised impact and screening mitigation in the BEMP and Appendix 6-4 of the EIAR Section 13.7.3.4. Tree clearance and the loss of habitat reported in Chapter 6 of the EIAR will be mitigated through the BEMP. Settlement ponds and swales are part of the drainage design with the specific intention of protecting water quality and they are described and visualised in Fig. 4-25 of Chapter 4 and Appendix 4-8 of the EIAR. The applicant is confident that the Project LVIA is proportionate, appropriate and robust to represent and assess the effects of ancillary infrastructure. Based on the above the issues raised in refusal reason no.1 have been comprehensively addressed, the information before the Board is adequate and no deficiencies remain. The development will not seriously injure the visual amenities of the area and will not negatively alter the character of the rural landscape to a significant degree. As such the development is not contrary to the CCDP nor the proper planning and sustainable development of the area.
Refusal Reason No.2 The Planning Authority ("PA") noted hydrological connectivity between the proposed development site and the Lower River Shannon SAC, the River Shannon SPA and the River Fergus Estuaries SPA and that the majority of habitats and species for which the European sites are designated are water-dependent with requirements for high to pristine water quality. Having regard to the particulars submitted, particularly the peat and spoil management proposals, surface water management plans and the WFD Assessment, the PA was unable to conclude beyond reasonable scientific doubt in the Appropriate Assessment process, that the proposed development would not adversely affect the integrity of downstream European sites. The proposed development was therefore considered to be contrary to Objective	The appeal sets out the authors of this appeal response and their competencies. It refers to Chapter 6, 8 and 9 of the EIAR and associated appendices, and the NIS. The appeal response is structured into two headings, each with sub-headings. They can be summarised as follows: Water <i>(Water Framework Directive Compliance Assessment) ("WFD CA")</i> The PA raised concerns regarding the screening process used in the WFD Compliance Assessment and the potential effects on Doon Lough and Doon Lough NHA. The PA is incorrect in its view that the WFD CA suggests that Doon Lough or Doon Lough NHA will be impacted by the proposed development. The WFD CA states that there will be no change in the WFD status of any downstream surface waterbody as a result of the project. All 'screened in' waterbodies and designated sites which are in closest proximity to the site will be protected by prescribed mitigation measures, therefore all other downstream waterbodies and designated sites are also protected. The WFD CA concludes that the qualitative and quantitative status of all receiving water bodies will not be altered. <i>(Cumulative Hydrological Assessment) ("CHA")</i> The PA raised concerns regarding the CHA and suggested that the EIAR implies that both Doon Lough and Lough Derg can take impacts from the development and assimilate them based on the dilution factor...which indicates that both lakes will be impacted and take potential pollutants arising. This was not stated in the EIAR and represents a significant misunderstanding of Section 9.5.7. The reference to the dilution capacity of Doon Lough and Lough Derg relate to the early WFD screening process and delineation of the cumulative hydrological study area, which did not consider mitigation. The WFD CA and CHA rely on the implementation of strict mitigation measures for the protection of water quality and quantity of all waterbodies at and downstream of the development as detailed in

CDP15.3 of the CCDP and contrary to the proper planning and development of the area.	Section 4.3.1.1.3 of the appeal response and Chapter 9 of the EIAR. These measures are designed to ensure that the small streams and rivers which drain the development site do not experience a deterioration in water quality/quantity and by protecting these proximal watercourses and headwater streams from potential effects, all other downstream watercourses and designated sites are also protected. The proposed development will not cause a deterioration in the WFD status of any waterbody or protected area and will not jeopardise the WFD objectives to achieve 'Good' status in the future. The PA statement that this is at odds with the conclusions of the NIS is completely misguided as both the NIS and the cumulative assessment set out in the EIAR rely on the mitigation measures described in reaching their respective conclusions. Biodiversity & Appropriate Assessment The PA as competent authority for AA was unable to conclude beyond reasonable scientific doubt that the proposed development will not adversely affect the integrity of downstream European Sites. An Appropriate Assessment Screening Report (AASR) was prepared by the applicant for the proposed development which identified hydrological connectivity between the proposed development site and the Lower River Shannon SAC and River Shannon and Fergus Estuary SPA and a potential pathway for likely significant effects due to deterioration in water quality and habitat degradation. Therefore, an NIS was prepared. Following a robust assessment the NIS outlined detailed mitigation, utilising those described in Chapter 9 of the EIAR, and concluded that the pathway by which an adverse effect on a European Site may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures and that there is no potential for adverse effects on the identified QIs/SCIs or on any European Site. The mitigation measures for the protection of water quality serve to protect all downstream waterbodies. Based on the above the issues raised in refusal reason no.2 have been comprehensively addressed, the information before the Board is adequate and no deficiencies remain. The development will not have an adverse effect on a European Site and as such the development is not contrary to the CCDP nor the proper planning and sustainable development of the area.
Refusal Reason No.3 It is an Objective of the CCDP (15.12) to (inter alia) promote the conservation of biodiversity through the protection of sites of biodiversity importance and wildlife corridors, both within and between a designated site and the wider	The appeal sets out the author of this appeal response and their competencies. It refers to the Biodiversity Chapter of the EIAR and associated appendices, and the NIS. The appeal response can be summarised as follows: This refusal reason relates to birds and the potential for significant cumulative impacts to result from 66no, permitted or proposed turbines in a relatively small geographical area. The PA acknowledges that the proposed development is unlikely to impact on bird species in isolation. In effect, the PA position is that 66no. turbines would exceed a

plan area. Having regard to the importance of the area for multiple bird species, as evidenced by survey results submitted, and in the absence of a strategic level cumulative assessment of the impact of the construction of a large number of turbines within one geographical area (66 turbines proposed or permitted) the PA cannot satisfactorily determine that the proposed development will not give rise to, or contribute to, significant or adverse effects on either the special conservation interests of SPA's in the zone of influence of the proposed development, birds of conservation concern or on the Red List. It was considered that the proposed development would significantly diminish the biodiversity value of the area, would be contrary to Objective CDP15.12 of the CCDP and would be contrary to the proper planning and sustainable development of the area.	threshold for acceptable change and significant cumulative effects would result, but the PA did not specify this threshold and did not state that it was met by permitted turbines alone. The EIAR cumulative assessment findings and methodology are then summarised as follows: • A GIS mapping exercise was undertaken that aimed to quantify the amount of land within the uplands that is unlikely to be significantly impacted by the presence of turbines. • Impacts were restricted to the area near a turbine being 500m⁸. Lands above 100m were included as a reasonable approximation of the upland area where the windfarms identified by the PA occurred. • The total upland area is 17,218ha and of this 1,254ha is within 500m of a permitted turbine. There is therefore currently a low density of turbines permitted within these uplands and no existing turbines. Only 7% of the land is within 500m of a permitted turbine. • If the proposed development was granted planning permission there would continue to be a low density of turbines in this area. If all proposed windfarms receive planning permission and were built, there would continue to be 10,280ha greater than 500m from a turbine which is a significant amount of upland habitat. In this scenario these uplands would also include large areas of enhancement lands managed for the benefit of local birds. • A grant of permission for the proposed development, which is considered relatively benign is within the threshold for acceptable change and highly unlikely to contribute to significant negative effects. Based on the above the issues raised in refusal reason no.3 have been comprehensively addressed, the information before the Board is adequate and no deficiencies remain. In summary no likely significant cumulative effects are predicted, the development will not significantly diminish biodiversity and as such the development is not contrary to Objective CDP15.12 of the CCDP nor the proper planning and sustainable development of the area.
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⁸ Based on Pearce-Higgins *et al* (2009) and significant avoidance of turbines for a range of species at 250-500m.

12.0 Planning Authority (“PA”) Response

12.1. A response was received from the PA on 16th December 2024. It can be summarised as follows:

- The proposed development is located within an area which is Open for Consideration for wind energy development in the adopted Wind Energy Strategy in the CCDP. In these areas wind energy applications are evaluated on a case-by-case basis subject to viable wind speeds, environmental resources and constraints and cumulative impacts. Key issues such as the wind resource, residential amenities, landscape and visual impacts, landslide susceptibility and potential impacts on tourism, creation and amenities must be evaluated before a development can be deemed acceptable.
- The appeal documents has been considered and the PA refers, in most respects, to the detailed assessment and considerations set out in the Planners Report and other technical reports on file. The PA is satisfied that the assessment undertaken was detailed, robust and represented a correct interpretation of data and assessment presented by the applicant.
- The PA considered that the proposed development would have a significant negative impact on the visual and residential amenities of the area, would adversely affect the integrity of downstream European Sites and has the potential for significant cumulative effects on biodiversity and most particularly bird species.
- The PA considers that there are numerous issues of significant concern associated with the development which cannot either be mitigated due to the nature of the development and characteristics of the site, or which were not adequately addressed and mitigated by the application.
- The Board is requested to uphold the PA decision to refuse permission.

13.0 Observations

A total of 19 observations were submitted concerning the first party appeal. These observations encompassed a broad spectrum of issues, many of which presented varying degrees of overlap, yet were articulated with distinct perspectives. In an effort to provide clarity and coherence, I have endeavoured to summarise and categorise these concerns under the following headings in Table D below accordingly:

Table D – Third Party Observations

Compliance with the Requirements of Article 94 and Schedule 6 of the Regulations, 2001 (and associated).
Issues Raised:
- Some authors of the EIAR, whilst qualified, lack necessary experience. - There are quite a number of ‘requires further assessment’ comments throughout the application in respect of potential indirect effects such as effects to nearby peatland as a result of drainage effects. - The authors of the EIA are not independent; therefore the environmental impact has not been assessed as required by the EIA Directive 2011/92/EU as amended by 2014/52/EU - There is no evidence of a compliant EIA process having been carried out, or of a design led by ecological constraints. There is no evidence of an iterative design and re-design process. - The type and size of turbines have not been specified. There is no specific information on the volume of materials to be transported to and from the site or the routes chosen for same. Impacts cannot therefore be accurately assessed. - Turbine life of 35 years is disputed. It is considered turbines are out of date in 20 years. - Whether or not turbines of a greater size than those proposed will be constructed is queried. - Reasonable alternatives are not meaningfully discussed. - The redaction of certain sections of the EIAR (Appendix 7-5(a)-(d) make it difficult for members of the public to engage in a meaningful way with the process contrary to the Aarhus Convention. - Inadequate consultation, only secrecy. The contention that consultation was carried out with local residents and interested parties is rejected.
Population and human health
Issues Raised:
Kilbane Village:
Much of the literature provided references proximity to Broadford, there is little to no mentioned of construction and operational impacts on residents of Kilbane Village.
Shadow Flicker:
- Shadow Flicker will affect numerous houses to the west of the development, this will be intolerable. - Shadow flicker (and noise) will affect residents, more specifically those with sensory issues. - Software to prevent shadow flicker does not exist. The blades are too inert to stop in time with field tests showing it can take up to 25min before a blade will stop.
Noise: <i>Low frequency/non-audible, Infrasound Amplitude and Modulation (AM)</i>

▪ Low frequency noise cannot be assessed as the turbine type has not been specified. Additional noise and low frequency sound may add to the burden of environmental noise that the ASD population is coping with causing further disadvantage and social exclusion. ▪ Audio and non-audible sounds will impact mental health, sleep and cause stress and anxiety. Noise at night and sleep disturbance is a concern. There are long-term health consequences associated with disrupted sleep. ▪ Turbines produce infrasound, which is inaudible to the human ear but can affect the human body detrimentally. A vibrant infrasound can affect the inner ear and central nervous system without damaging hearing. Developers generally present infrasound responses in the context of a single turbine, ignoring the multiplier effect. They also compare to existing sources such as motorways, ignoring that wind energy noise impact is constant. ▪ Amplitude Modulation (AM) is not discussed in the current 2006 Guidelines and developers are whitewashing over the issue with excuses in relation to difficulties over measuring AM. ▪ The accuracy of background noise levels at the subject site is questioned, particularly why the difference between the subject site and Carrownagowan and why the subject site is 'noisier'. ▪ The efficacy of existing quoted or referenced studies on infrasound which evidence no significant harm is questioned, particularly its impartiality. The methodology erroneous, the data limited and outdated, and the conclusions wrong. ▪ Construction noise will be significant. The mitigation measures are either not practical or not realistic and will be impossible to police. ▪ A recent High Court Case ruling by Ms Justice Emily Egan held that noise levels from the two-turbine Ballyduff Windfarm at Kilcomb near Enniscorthy, Co. Wexford amounted to unreasonable interference. The proposed turbines are higher and more elevated. ▪ Reference to 1995 WHO documents, when there is more updated WHO Guidance is questioned. ▪ The precautionary principle should apply in the absence of new wind energy guidelines.
Residential Amenity (<i>General</i>) & Property Values
▪ Houses below and in proximity to turbines are concerned about landslide risk, flooding and ground water impacts particularly on potable bored well drinking sources. ▪ Residents will experience a significant reduction in quality of life due to visual intrusion, noise and potential shadow flicker. ▪ Residential property will be devalued, existing mortgages will be impact as loan to value ratios are impacted. A loss of value is cited from 25% - 40%. ▪ The development will adversely impact on property values.
Local Community, business & Tourism
▪ Reduction in outdoor amenities, increased traffic and degradation of roads. ▪ Impact on health of school children from emissions during construction. ▪ There are concerns about the effective and proportionate operation of the RESS community scheme and that it will equitably meet community needs with necessary consensus. ▪ If granted the wind farm will affect community growth, it will be near impossible to obtain permission and younger generations and families will move away.

▪ The development will sterilise property and land and devalue house prices. People will chose to live elsewhere threatening community life, social life and clubs. ▪ The development will impact the public realm and amenities of the local community. ▪ The developed has faced significant opposition from the local community, to grant permission would disregard their legitimate concerns. ▪ The idyllic natural hide away offered by Kilbane Glamping will be lost forever with noise and shadow flicker impacts. ▪ Permission is sought for 10-years, meaning a potential of 10 years of construction impacts. Tourists will not suffer construction related impacts, particularly traffic disruption, and therefore there will be a downturn in tourism. ▪ East Clare stands for gentle eco-tourism and this will be put at risk by the development and the injury to the landscape, scenic routes and visual amenities of the area. ▪ Employment in the tourism industry will be negatively impacted by the associated downturn in tourism.
Light Pollution
▪ Flashing lights at night will cause nuisance, anxiety, disrupted sleep and detrimental health effects. ▪ Impact of light pollution/sensory overload on neurodivergent members of the community. Disruption to quality of the night sky and nocturnal wildlife from aircraft warning beacons.
Safety Concerns
▪ The development would create hazards such as turbine collapse or blade failure. ▪ Whilst the developer has not specified the turbine model, the operations and safety manual for Vestas Model NM52-900 is referenced together with safety instructions that recommended certain separation distances in specific instances such as 'runaway rotor' and 'thunderstorms' of 400 & 500m. Given the proximity to T1 to farmlands (98.7m) how can farming activities and livestock remain safe. ▪ Turbines are not safe for persons with sensory issues or for fauna. In addition recent red weather storm events have clearly resulted in turbine structural failures and associated safety concerns. ▪ Turbine blades can through off 'ice' in specific weather conditions, posing a safety risk up to 1.5km distant.
Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC respectively).
Issues Raised:
Barn Owl
▪ There is a nesting barn owl within 1m of the transport route. Protected bird species will be irreversibly affected in their natural habitat. Other species, including bats, will have their environment destroyed. ▪ The Barn Owl survey is inaccurate and incorrect underestimating pairs. There is mentioned of Barn Owl within 2.6km of the site which is untrue, there are 4 Barn Owl nests in the Kilbane area with one nest in a derelict house in the village.
Hen Harrier
▪ The development has the potential to impact Hen Harrier with the site consisting of important habitat between (and connecting through foraging Hen Harrier) two SPA's (Slieve Aughty and Slieve Felim/Silvermines) and this needs to be assessed in the NIS.

▪ The site is part of the Acres Munster Uplands Co-Operative Zone an EU funded project and Hen Harrier Protection Zone. ▪ Hen Harrier had its worst breeding year in 2021, nationally numbers are in decline. There is a legal requirement on the State to preserve, conserve and protect Hen Harrier Habitat under the Birds Directive. ▪ Turbines are proposed on and near forestry that may have been planted in upland peat habitat without EIA/AA. These habitats are important for breeding Hen Harrier which are protected under the Birds Directive. NPWS estimate that only 85 to 106 pair remain and Slieve Bernagh Hill to Keeper Hill are estimated to be home to 2 to 4 pair. Their habitat must be protected whether or not designated an SPA. Cumulative impacts must be addressed including initial forestry plantation. ▪ Hen Harrier rely on acoustic cues to hunt. Noise impacts on Hen Harrier habitat including cumulative noise impacts is not addressed. Will the cumulative wind farms create a wildlife barrier? ▪ The lands at the site are comprised primarily of afforested non-native invasive conifer species which would have resulted in the direct loss of hen harrier preferred habitats of heath, bog and open natural habitat. It is likely that assessment of the afforestation proposals at that time was required under the Birds Directive, Habitats Directive, EIA Directive and Wildlife Act. It is up to the Board to make sure that an EIR was in place prior to these forests being planted. ▪ The area around the windfarm has nationally significant numbers of hen harrier. The hen harrier surveys completed by the applicant from Oct to March are outside best practice and would lead to under-representation. ▪ An extract from the Fahybeg Windfarm identifies an area of land that is now between T6 and T7 of the proposed development as providing suitable habitat for breeding Hen Harriers and Merlin.
Bats ▪ Inadequate bat surveys. Unauthorised construction works on a slatted shed put bat survey into dispute at that location (see. P.38 of Appendix 6-2). ▪ NPWS advice to use 30 day survey periods with static automated detectors in each season and in different weather conditions (for Bats) was not adopted. ▪ The loss of data in the initial spring deployment, little variation in weather, and 'gappy continuity' of data in the additional detectors deployed, raises significant concerns in relation to the overall picture of bat presence, migration patterns, or behaviour throughout the year. ▪ The Bat survey data was undertaken in 2022 which is out of date. Ecologists revisited the site in 2023 and 2024 and found no change in the baseline environment to justify new surveys. Yet new guidance as recommended by NPWS was not complied with. 30 day survey period in each season is not provided, there was little variation in weather and spring survey period was impacted by data loss. ▪ The Bat Mitigation and Monitoring Plan is wholly inadequate. ▪ Treeline valley to the left of T1 within folio CE53576F is a haven for bat activity. There is a known Lesser Horseshoe Bat roost 710m west of T6, we are not told how close this roost is to other turbines or Fahybeg and given the foraging range of this species it is likely impacted by more than one turbine.
Biodiversity (General/other) ▪ Concerns are expressed in relation to the efficacy and reliability of the proposed mitigation measures. The Board is charged with carrying out an independent assessment of the submitted information. ▪ How can hundreds of tonnes of soil be excavated and replaced with concrete so close to an SAC (Slieve Bernagh)

- Given the extent of bird species of concern recorded on the site, particular raptor species, and the presence of Red-listed species, the windfarm must be rejected.
- The option of replacing lost hedgerow and treelines with fast growing species such as willow when semi-mature specimens of local provenance are not available, is not acceptable.
- Peat bogs are not a suitable habitat for windfarm development, with the risk of bog burst and peat slide. They also perform as a valuable carbon sink and their destruction may lead to excessive Co2.
- Cumulative impacts on biodiversity are not adequately addressed and to do not adhere to the EIA Directive. A strategic level cumulative assessment is required and this was noted by CCC.
- A Marsh Fritillary Report has not been furnished in the EIAR. It is stated that patches of 'devils bit scabious' were discovered only with no larval webs. This species is famous for a 'boom and bust' fluctuation in numbers and NRA guidance is clear that suitable but unoccupied habitat near to existing populations should be considered of value. Populations were identified in the Fahybeg application and therefore further independent study is warranted.
- The obligations under the Habitats Directive 92/43/EEC cannot be met considering the significant removal and destruction of habitats required.
- Obligations under the Birds Directive 2009/147/EC, 79/409/EEC cannot be complied with considering the reported destruction of bird habitats and collision risk. The collision risk modelling is outdated based on turbine technology over 10 years old or based on half the tip height and a fraction of the rotor diameter. It should be disregarded.
- The GCR travels through Glenmora Wood Sac (001013). This is an oak forest and digging an underground cable is in breach of EU legislation. The applicant has not demonstrated Notifiable Action Consent for the grid connection works through this SAC.
- The possible use of 'lead' in the grid connection is questioned, particularly in the context of its proximity to European Sites and its poisonous characteristics.

Land, soil, water, air and climate

Issues Raised:

Water

- Due to the hydrological characteristics of the peatland within the site it has the highest level of risk for landslide susceptibility (source – Geohive).
- Hydrological connectivity to downstream European Sites pose significant concerns for water quality and ecosystem integrity. Mitigation measures do not alleviate the risk.
- Many watercourses in the vicinity of the site were evaluated as being locally important given the presence of aquatic species of high conservation value and/or Q4 good status. Biological water quality at Kilbane Stream and Ardclony River is Q4-5 high status. The proposed construction works will result in significant impacts through siltation, enrichment and/or hydrocarbons.
- Construction and operation is likely to disrupt groundwater flow regimes including infiltration, surface run-off patterns and groundwater storage.
- The enormous volumes of crushed rock and cement products required for new road constructions and upgrades, hardstands and bases etc, together with washout, presents a serious risk of accident and pollution to surface and groundwaters. This is a breach of European Communities Environmental Objectives Regulations.
- The Glenomra River has been identified as 'at risk' by LAWPRO.

▪ The Water Framework Directive 2000/60/EC cannot be complied with considering the significant earth works and construction works in close proximity to tributaries of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.
Air
▪ The Air Quality Directive 2008/50/EC sets limits on air pollution to protect human health and the environment. The EPA and WHO identify PM2.5 as a significant concern. One of the largest anthropogenic sources of PM2.5 is diesel heavy goods vehicles which will be used in their thousands in the construction of this project.
Climate
▪ Green energy from onshore windfarms is a myth. The energy is not cheap. ▪ The technology is weather dependent. It requires fossil fuel or nuclear energy back up. ▪ The use of SF6 gas in turbine switchgear is highly toxic, leaks contribute to climate change in a manner much more detrimental than Co2. ▪ The use of minerals in the manufacture and construction of turbines and oils and fossil fuels in their operation undermine their green credentials. ▪ Many turbine components are not recyclable. (GFK and CFK). Turbine blades also shed microplastics (BPA) endangering wildlife, fauna and livestock. ▪ The energy generated will be consumed by Data Centres. No community or green dividend. ▪ Attitudes to solar farms are misleadingly presented as attitudes to windfarms. ▪ HGV's, emissions and other impacts associated with repositioning of waste to Tuamgraney, Inagh and Shannon waste facilities is not assessed.
Material assets, cultural heritage and the landscape
Issues Raised:
Traffic & Transport
▪ Current road infrastructure is not capable of withstanding the increased level of HGV Traffic. This is evidenced by the disruption and damage caused by the Killaloe Bridge Project. ▪ Coillte works on the Gap Road L7080 had to be stopped due to damage. All routes are local routes and would need significant upgrades to facilitate the traffic proposed which alone would cause devastating environmental damage and disrupt the lives of local residents. ▪ L7004 is identified as the route for stone delivery, this is a single-track road not suitable for HGV traffic. ▪ It is alleged that road improvement works have commenced without planning consent. ▪ The EIAR states that third party land is required on the north side of the R466 and east side of L3022-0, but such consent is not identified or confirmed. ▪ Concerns are expressed about HGV movements on L3022-0 and Scotts Bridge. ▪ The proposal to 'divert traffic L7080' with a diversion route of 19.1km does not take account of distance, steep gradient or single carriageway width of this diversion. ▪ The proposal to use a local quarry in the Broadford area is questionable as it may not be licensed. If it is used, then the delivery route will use two Bridges which are protected structures and these have not been taken into consideration in the EIAR. It will also involve 4km of L7004 which can barely cater for single vehicles.

▪ The delivery of abnormally sized loads requires the removal, pruning, setting back of roadside boundaries. All landowners consents may not be in place. Rural dwellinghouse policy prohibits the removal of roadside boundaries. It is hoped a consistent approach is applied. ▪ There is no mention of what specific measures are being put in place for locals to continue to carryout their day to day activities such as school runs, waste disposal, milking etc. ▪ It is stated that 13.8ha of forestry will have to be felled, the additional traffic is not calculated or assessed. ▪ The RSA appears only to consider the L7080 and the general construction site. It does not appear to consider Kilbane Village, the four crossroads of the L7004 all of which will facilitate construction traffic. ▪ The EIAR states (Location 11 – left bend on the R466 at junction with Riverdale, Bridgetown) that trees need to be trimmed and pruned. These trees are no land SW of St. Thomas Church and the applicant does not have the landowners consent. ▪ The number of vehicles, particular HGV's, will number approx. 1 per min at peak times in specific areas, which together with abnormal loads, presents a traffic safety risk on such minor local roads. ▪ The road infrastructure in the area is woefully inadequate to cater for the proposed development. The R466 can only allow two cars to pass with care, local roads are single carriageway width. Cumulative effects are not considered, the alternatives suggested do not exist. ▪ The inadequate capacity of regional and road infrastructure to facilitate grid connection and construction traffic is re-iterated and stressed. It is considered that this will disrupt local traffic, cause obstructions, chaos and hazards over a prolonged period of time on residential properties, schools, creches, nursing homes. This is not to mentioned pedestrians or cyclists. The R463 and R466 are highlighted in particular.
Aviation
▪ Not all correspondence with IAA/AirNav is included in the scoping responses, particularly an email from IAA dated December 2022. ▪ A letter from Shannon airport dated 2nd September 2024 indicates serious concerns with obstacle limitation surfaces and shares concerns of AirNav in relation to impact of IFP, nav aids and radar systems. ▪ The development includes design flexibility which is not compatible with the exacting standards required for potential aeronautical impacts. ▪ The developer has not assessed or considered whether or not the windfarm will impact minimum sector altitudes. ▪ Obstacle separation calculations for T03 require reassessment as it is within the margin of error and was based on a height of 175m not 180m. ▪ Desktop evaluations only have been undertaken in relation to impacts on communication and navigations systems. Cumulative impacts have not been considered and detailed assessments to the satisfaction of AirNav have not been carried out. ▪ Fundamentally IAA states they cannot support the development based on the impact on surveillance systems. The developer says otherwise. ▪ The developer has failed to assess the impact on the ATC minimum vectoring altitude chart. AirNav have not confirmed that there will not be an impact. ▪ The development on elevated hills on the landing and take-off approach to Shannon Airport presents an unacceptable risk to air traffic. No mitigation measures can alter this.
Telecommunications
▪ The development will obstruct mobile phone and internet reception.
Archaeology, Architectural & Cultural Heritage
▪ Placing turbines in close proximity of archaeological monuments would diminish their historical and cultural value. (Formoyle Bed Hillfort and other enclosures, ringforts and wedge tombs. ▪ The Bridge at Aharinamore on the GCR cable route is not included in the assessment.

▪ The bridge crossing by means of directional drilling to a depth of 1.5m on Kilbane Bridge, a Protected Structure, is highly questionable.
Landscape & Visual Amenity
▪ The turbines (due to height and siting) will constitute a prominent feature on the landscape from local and long-range views and will injure the visual amenities of the area, particularly from the R466 scenic route. ▪ Dwellinghouses in similar elevated locations have been deemed injurious to the visual amenities of the area, but turbines of 200m in height are in order? ▪ The turbines are simply too big, they will be visually overbearing, result in spatial and visual dominance contrary to the 2006 Guidelines in relation to the scale of landscape, proximity to dwellings and small urban nodes.
Other
Issues Raised:
Procedural
▪ The proposed Blade Transition Area is not the subject of this application, nor a separate application. The loss of trees has not been assessed nor bat potential. Legal interest has not been established. There is a stark contrast in this approach with the Knockshavno Windfarm proposal where temporary permission is sought and a Bat Habitat Appraisal included. ▪ Planning application processes appear to be 'pro-developer' with extra time being afforded to address deficiencies as opposed to refusal. ▪ There is no effective enforcement ensuring compliance with mitigation and conditions of planning permission for wind energy developments.
Cumulative Impacts
▪ Fahybeg and this proposed development propose to use the same TDR yet a cumulative analysis of both these developments on the R466 is not given. With regards to Fahybeg, CCC singled out the accommodation works at Node 31 requiring the removal of 160m of preserved treeline as fundamentally altering the character of the village of Bridgetown. ▪ The trees at Node 31 on the TDR were not checked for a potential bat roost, nor was an uninhabited structure called 'the Forge'. ▪ The curtailment measures for Leisler and Common Pispistrelles Bats do not have due regard to cumulative impacts. ▪ Cumulative impacts on bats with Fahybeg have not been taken into account. ▪ Cumulative impacts generally of all wind energy proposals in the wider area have not received adequate, honest or accurate attention. ▪ The cumulative impacts on habitats, biodiversity, visual, traffic and population etc will be significant as a result of duplication of site access roads, grind connection routes, forestry clearance etc. This is not consistent with proper planning. ▪ Cumulative traffic impacts are not identified or assessed. The assumption that different routes will be used by other wind energy development is unacceptable. If other developments proceed in conjunction, traffic chaos will result. The R466 is the only main route for all developments.
Contravention of Planning Policy
▪ The proposed development does not align with the CCDP which emphasises the protection of the environment, scenic areas, preservation of community well-being and the public realm. ▪ The proposed development will contravene Objective CDP 14.7 which seeks to protect scenic routes. ▪ The development is not 'small scale' and will 'decrease the population of Kilbane Village' as a consequence of negative impacts. It is contrary to the Objectives for Kilbane Village set out in Vol.3c of the CCDP.

▪ The development is contrary to CDP 15.2.b and d. in relation to the protection of biodiversity, wildlife corridors and LHB. ▪ The choice of very large turbines is contrary to CCDP 14.2 and the objective in relation to 'settled landscapes'. ▪ The site is 'open to consideration' but is not suitable for turbines of the scale proposed which were not considered by the WES, 2006 Guidelines or CCDP. Strategic or 'acceptable in principle' alternatives should have been considered.
Contravention of European Law
▪ The development is in breach of Strategic Environmental Assessment (SEA) Directive 2001/42/EC – an SEA has not been carried out. A CJEU ruling has been upheld in case C-24/19 which should also apply in this case. ▪ The separate progression of the Carrownagowan, Lackareagh and Faghybeg Windfarms and grid connections and is a piecemeal approach to strategic wind development and constitutes project splitting.
Wind Energy Guidelines (2006)/CCDP/WES
▪ The wind energy guidelines are outdated. ▪ CCDP erred gravely in designating areas around Broadford as 'strategic' and 'open for consideration' for wind given their proximity to European sites. ▪ The development is within an area considered to be a 'heritage landscape'. Windfarms should not be considered at this location. ▪ CCC has called for a moratorium on wind farms pending new guidelines. The WES did not consider turbines of the number, scale and height now proposed. ▪ An EIAR and NIS which refers to the 2006 Guidelines is unsuitable as these guidelines are out of date. ▪ The 2006 Guidelines were not subject to SEA and therefore cannot be relied upon. ▪ The WES envisages 'medium scale' windfarms for this area being 75-100m at blade tip and comprising 6-10 turbines.
Legal Interest
▪ Folio CE56707F consent provided by Coillte. Coillte is not the registered owner. Consent letter includes an indicative map, not clear which folios consent has been given for. ▪ Folio CE26031, 21277, 21214 & 2766 have 'entitled to be' landowners as signators. Query over authority. ▪ Folio CE24441F is prohibited from being sub-let or sub-divided. Land Commission consent in writing required for sub-letting. ▪ Folio CE24441F has a public right of way which will be restricted during construction. Also has turbary rights which will be impacted. ▪ Folio CE21277 contains a charge in favour of the HSE, therefore there is a query over signatory authority. ▪ Folio CE2124 landowners consent provided but the land does not form part of the outline maps, therefore query over map accuracy. ▪ Folio CE57584F contains a right of way which will be restricted during construction. ▪ Folio CE8083 contains sporting rights (Gun Club), have all shareholders given consent, will sporting rights be restricted? ▪ Folios CE1934F & CE1935F contain fishing rights, have all shareholders given consent, will these rights be restricted? ▪ 12 out of 16 consent letters are undated.

14.0 Assessment

14.1. Having examined the application and appeal documentation on file and having regard to relevant policy and guidance, it is considered that the key issues in this appeal are the reasons for refusal as stated by the Planning Authority together with Environmental Impact Assessment (EIA) and Appropriate Assessment (AA). The Planning Authority's reasons for refusal are considered to be reflective of the third-party observations received and can be broadly summarised under the following headings:

- Principle of Development
- Impact on Landscape and Visual Amenity
- Hydrological Impacts
- Impacts on Biodiversity
- Cumulative Impacts.
- Other Issues

14.2. To avoid repetition and ensure clear articulation of the key issues my assessment is structured into three inter-related sections: The Planning Assessment, the Environmental Impact Assessment (EIA) and the Appropriate Assessment (AA). The Planning Assessment will address the principle of development and other matters. Impact on Landscape and Visual Amenity will be considered in the EIA and the consideration of hydrological, biodiversity and cumulative impacts will be addressed within both the EIA and AA.

15.0 Planning Assessment

15.1. Principle of Development

15.2. The site is located on lands zoned as '*Open to Consideration*' in the CCDP and were policy WES10 of the CWES provides that "*wind energy applications in these areas will be evaluated on a case-by-case basis subject to viable*

wind speeds, environment resources and constraints and cumulative impacts.”

The site is also located within the Slieve Bernagh Uplands Landscape Character Area (LCA8) and Table 4a of the CWES describes LCA8 as having ‘*medium to low*’ sensitivity to windfarm developments and states that the appropriate size of wind farms in this area is ‘*large*’. In terms of capacity the potential renewable energy generation for this area is estimated in the CWES at 150MW.

- 15.3. In recommending that planning permission be refused, the PA stated that it did not accept that the principle of development was acceptable, referring to key issues raised in its EIA, AA and planning assessment relating to cumulative impacts (Birds), residential amenity, visual, traffic and water quality impacts. The principle of development was not however a specific reason for refusal by the PA.
- 15.4. These matters are comprehensively addressed in the EIA and AA sections of my report which concluded that the proposed development would not give rise to significant effects on biodiversity (inc. Birds) or water, would not give rise to significant cumulative effects and that adverse effects on the integrity of European sites could be excluded in view of conservation objectives. Whilst the EIA report also concluded that the proposed development would give rise to certain population & human health (noise) effects, landscape and visual effects and short-term traffic effects, it was considered that:
 - a. The minor significant effect on population and human health as a result of operational BESS noise remained below the threshold indicating a potential ‘adverse’ effect (in BS 4142),
 - b. The significant residual landscape and visual effects in respect of regional road R466/Scenic Road SR26, the East Clare Way and from a small number of local residential receptors in the immediate area of the site including Kilbane village, would be mitigated by a combination of topography, screening, distance, set back distances and design etc and are not such that would warrant refusal, and

c. The short term, residual significant effects for motorised and non-motorised traffic on the local and regional roads west of the Shannon for the 18-24mts construction period are mitigated by the management arrangements for same, and the temporary nature of the impacts associated with the construction of a development of this nature are acceptable.

15.5. I consider it particularly salient that the CWES classifies the LCA8 location of the site as being appropriate for '*large*' windfarms (*defined as 11-20*) and as having '*medium to low sensitivity*' to wind energy developments. I also note (and accept) that the more sensitive '*Heritage*' living landscapes (within the CCDP) were scoped out of the LVIA on the basis of almost entirely no, or no theoretical visibility, that no significant cultural heritage or archaeological features were signposted, and that the site is modified by existing commercial forestry and low-intensity agriculture.

15.6. As referenced above, there is substantial and robust international, national, regional and local policy which supports the development of renewable energy, including onshore wind. This renewable energy development will have an estimated power output of 46.2 MW per annum. Over its lifetime, the development has the potential to displace 1,139,775 tonnes of CO₂ which is a significant reduction in GHG emissions, with the CO₂ losses due to the project offset within approx. 30mts of operation. It has the potential to generate 145,649MWh per annum, sufficient to supply 33,726 Irish households annually. The proposed development is therefore consistent with this policy context and would contribute to achieving targets set by the EU, State and County Clare for onshore wind energy. Given the urgent requirement to roll out renewable energy in the state, including to dial up onshore wind, and the obligations placed on the Board under section 15 of the Climate Act, 2015, I am satisfied that the principle of wind energy development on lands '*open to consideration*' in the CCDP, and classified with capacity for '*large*' windfarms and '*medium to low*' sensitivity to wind energy development in the CWES, is acceptable.

15.7. Planning Authority Refusal Reason No.1

15.8. The PA's first reason for refusal concerned landscape and visual effects. It is heavily premised on a view that the proposed wind farm is located on open and exposed lands within more sensitive areas of the Slieve Bernagh Uplands LCA8, and with a high degree of visibility and impact. The PA considered that in this context, the scale, height and siting of the proposed turbines would injure the visual amenities of the area, including from the designated R466 scenic road, and would thereby contravene Objectives CDP14.2 and 14.7 in relation to the protection of landscape and scenic views (see Section 6.19 of my report for policy detail). This matter is comprehensively addressed in the Landscape and Visual Chapter of the EIA section of my report (Section 14.254). As can be seen therefrom I agree with the LVIA and ZTV conclusions that the site is not open and exposed, being within the Glenomra Valley, and it is not within the more sensitive lands of LCA8 having almost zero theoretical visibility from Lough Derg and not being located on unenclosed bog. In relation to the R466 scenic road I consider that views are largely peripheral, fleeting and over distance and very significantly mitigated by vegetation, natural and built landform. Where open views do present, they are limited, brief and localised being experienced from an infrequent stationary view. Whilst I accept that significant landscape and visual effects will occur in respect of scenic road R466 as a result of the introduction of turbines of scale into the landscape, I consider that they are mitigated by the aforesaid considerations and are not such that would warrant refusing permission. Accordingly, I consider that the PAs first refusal reason is not sustained, and the proposed development will not be contrary to Objective CDP 14.2 or 14.7 of the CCDP.

15.9. Planning Authority Refusal Reason No.2

15.10. The PA's second reason for refusal concerned hydrological and water quality impacts on downstream European Sites. It is largely predicated on an interpretation that the applicant's conclusions of no effects on downstream sites and water quality is based on the hydraulic buffer and dilution effect of Doon Lough and Lough Derg to mitigate impacts. The PA does not accept the premise of this position as a basis to exclude impacts or effects and therefore

determined that 'doubt' remained in the AA process and recommended that planning permission be refused as it would be contrary to Objective CDP 15.3 of the CCDP in relation to the protection of European Sites (see Section 6.19 of my report for policy detail). This matter is comprehensively addressed in the Hydrology Chapter of the EIA section of my report (Section 14.171), the WFD assessment included therein, and in the Stage 2 AA (Appendix 2) of this report. As can be seen therefrom I have concluded that with the implementation of the extensive mitigation measures set out for the protection of water quality and quantity there will be no significant effect on any watercourse or waterbody in the vicinity or downstream of the project development site including Doon Lough or Lough Derg. I am satisfied having regard to the assessment set out in the Hydrology section of my report, and in particular the conclusions of the WFD assessment and the Stage 2 AA (Appendix 2), that reasonable scientific doubt does not remain and that it can be concluded that the proposed development will not adversely affect the integrity of downstream European Sites. Accordingly, I consider that the PAs second refusal reason is not sustained, and the proposed development will not be contrary to Objective CDP 15.3 of the CCDP.

15.11. Planning Authority Refusal Reason No.3 and Cumulative Assessment

15.12. The PAs third reason for refusal concerned impacts on birds (including SCI's, birds of conservation concern, and those on the Red List), including cumulative or in-combination effects in the absence of a strategic level cumulative assessment of the large number of turbines within one geographical area. The PA also opined (in its assessment) that the permitted Carrownagowan Windfarm did not appear to be considered in the cumulative assessment. The PA recommended that planning permission be refused on the basis that it would be contrary to Objective CDP 15.12 of the CCDP in relation to the protection of flora, fauna and biodiversity. This matter is comprehensively addressed in the Birds Chapter of the EIA section of my report and in the Stage 2 AA (Appendix 2) of this report. As can be seen therefrom I am satisfied with the survey effort, that the applicant adequately

considered other bird species of conservation concern and/or red listed (Passerines) species and that the site is not of ornithological importance for the target species recorded during waterbird and abundance surveys.

15.13. In relation to the assessment of cumulative effects and the need for a 'strategic level assessment' I am of the view that such a need properly arises under the European Directive 2001/42/EC (the "SEA Directive") in the context of a plan or programme. In the circumstances of this case both the CCDP and WES were subject to SEA and HDA assessment processes as part of the statutory plan making process, which included an assessment of the likely significant effects of implementing the plan (including the proposed zoning(s) and designation(s)) before adoption. The zoning and designation of the site and surrounding lands was informed by this process. At development consent stage, I am satisfied that it is both in order, and appropriate, for the application to present a project level assessment of cumulative or in-combination environmental effects. In this regard I am satisfied that the cumulative assessment submitted by the applicant is comprehensive and reasonable and that the assessment of cumulative effects in the EIAR did include consideration of the permitted Carrownagowan Wind Farm. Having regard to my EIA findings of no significant effects (on birds) as a result of the proposed development, and the determination of the Stage 2 AA (Appendix 2) to this report I do not consider that justifiable evidence or material grounds exist which support the PA's third reason for refusal. Accordingly, I consider that the PA's third refusal reason is not sustained, and the proposed development will not be contrary to Objective CDP 15.12 of the CCDP.

15.14. Other Issues

15.15. Legal Interest and the proposed Turbine Delivery Route

15.16. Parties to the appeal were concerned that the proposed TDR, inclusive of the proposed accommodation works, was not included in the subject application for permission and that the applicant may not have sufficient legal interest in all the lands required for accommodation works. In the first instance I am satisfied that the TDR was included and assessed in the EIAR and NIS,

including regard to in-combination and cumulative environmental effects and this is considered the salient issue in respect of the consideration of this application. In terms of legal interest, I am satisfied that the applicant has demonstrated sufficient legal interest in the subject site. The CGR and the TDR are not the subject of this application and therefore the consent pathway(s) and legal interest considerations do not come within the scope of this application. However, in respect of the TDR I note that the proposed works are temporary accommodation works within the road line/corridor and therefore the question of planning consent, and/or third-party legal interest may or may not arise. This matter is likely to fall under separate legal codes in respect of temporary accommodation works to the public road network and/or consist of civil matters having regard to the provisions of Section 34(13) of the PDA, 2000 (as amended).

15.17.Compliance with SEA, EIA, and WF Directives.

15.18.Compliance with the SEA Directive and the need for a Strategic Environmental Assessment (SEA) is addressed in the preceding paragraph. Compliance with the WF and EIA Directive is addressed in the EIA and AA (Appendix 1 and 2) sections of this report.

15.19.WEDG, 2006

15.20.It is accepted that the WEDG 2006 are at this time aged, and that turbine technology and scale has significantly increased since they were first introduced. Whilst draft guidelines were published in 2019, these have not yet been adopted and it is clear that the 2006 guidelines remain in force. The application has however been brought forward with due and appropriate regard to the draft 2019 guidelines, and in respect of shadow flicker and residential amenity compliance with the higher standards of the 2019 draft guidelines (zero shadow flicker and a 4 x times tip height set back distance) is proposed. The application otherwise has regard to other appropriate government and industry guidelines and best practice (i.e. noise). Given the policy context for the urgent and rapid roll out of alternative forms of renewable energy within the state, including the need to dial up onshore wind,

I consider that the delay in the publication of revised wind energy guidelines does not of itself preclude decisions on wind energy developments including the granting of permission. I am satisfied that the WEDG 2006, dWEDG 2019, government and industry best practice guidelines continue to provide a robust and reasonable basis for the assessment of applications for wind energy developments (including EIA and AA processes) and on which informed decisions can continue to be made.

15.21.Design Flexibility

15.22. Parties to the appeal were concerned that design flexibility in relation to the turbine parameters introduced an unacceptable level of uncertainty in the EIAR process with regard to potential impacts and effects, particularly in relation to aviation. The applicant held a design flexibility meeting with Clare County Council under Section 34H of the Planning and Development Act, 2000 (as amended) on 28th March 2024. This meeting concerned the elements of the application which could not be confirmed before lodgement, specifically the turbine dimensions. A Design Flexibility opinion issued by CCC on 22nd April 2024 accompanies the application. The application has therefore been brought forward on the basis of turbine parameters and the EIAR assesses three different turbine scenarios. These are described in Table 1-3 of Chapter 1 as follows:

- Scenario 1 (Maximum) – Tip Height: 180m, Rotor Diameter: 155m and Hub Height: 102.5m
- Scenario 2 (Minimum) – Tip Height: 179.5m, Rotor Diameter: 149m and Hub Height: 105m
- Scenario 3 (Median) – Tip Height: 180m, Rotor Diameter: 150m and Hub Height: 105m.

15.23. I am satisfied that the range of parameters set out for the proposed turbines and the three scenarios which were assessed in the EIAR, allowed for a full and robust assessment of the likely environmental effects of the proposed development irrespective of the final confirmed turbine model.

15.24.Enforcement

15.25.Third party observers to the appeal express a concern that there is no evidence of effective enforcement within the state which ensures compliance with proposed mitigation measures and conditions of a planning permission in respect of wind energy developments.

A wide range of enforcement powers are available to Planning Authorities under the PDA, 2000 and the efficacy or otherwise of these powers or the performance of a Planning Authority is not a material consideration for the Board. The Board does not have enforcement powers, or an enforcement role and this matter is not within the jurisdiction of the Board.

15.26.Conditions

Whilst the decision of the PA in this case was to refuse planning permission, it is noted that both the internal and statutory reports included recommended conditions in the event that planning permission was granted. These conditions are set out in Table E below, together with information on their inclusion or exclusion in the recommended schedule of conditions to this report.

Table E: Consideration of Conditions

Road Design Office (CCC)		Included/ excluded in Schedule of Conditions
Traffic & Transport	Extent of road works, passing bays required and haul routes should be agreed prior to commencement of development	Included. Condition No.8b, & e and 9 refer.
	Pre, during and post construction surveys of roads, bridges and culverts.	Included. Condition No.8.d refers.
	Works to junctions to comply with TII publications and be subject to RSA.	Included. Condition No.8.a refers.
	Bridge crossings associated with GCR. TMP associated with GCR to be agreed. GCR should be co-ordinated with other planned GCR's.	Excluded. Outside the scope of this application.
	Residents to be notified of planned construction activities.	Included. Condition No.8e & 9 refer.

Killaloe MD Office (Roads Operations & Maintenance Team)		Included/ excluded in Schedule of Conditions
Tree Felling	L-3022 and L-7080 will require strengthening before commencement of works.	Included. Condition No.8.b refers.
	No haulage permitted on L-7004 Kilbane to Broadford or through the L-7080 Gap Road to Killaloe (to/from the site)	Included. Condition No.7 refers.
	Haulage routes must be agreed. Damage repaired.	Included. Condition No.8.e, 9 and 23 refer.
	All works vehicles must use the R-466, L-3022 and L-7080 for site access.	Included. Condition No.8.e refers.
Wind Turbine/Blade Delivery	TDR to be agreed.	Included. Condition No.9 refers.
	Land take/dedications responsibility of the applicant.	Excluded. Noted. Not a conditionable matter.
	Road Opening Licences will be required.	Excluded. Noted. Outside the planning code.
	Transport dates and times to be agreed.	Included. Condition No.9 refers.
Road Opening Licences	Conditions noted. This is outside the planning code and will be controlled by a separate process.	Excluded. Outside the planning code.
Road Reinstatement	Specified reinstatement requirements on the R-466.	Included. Condition No. 8.c refers.
	Cabling reinstatement works on Local Roads.	Included. Conditions No.8.c refers.
	GCR reinstatement works on approach to Ardnacrusha.	Excluded. Outside the scope of this application.
Road Closures	Road Closures to be advertised in advance.	Excluded. Outside the planning code.
Bridges/Culverts/Pipelines	Pre and post condition surveys required.	Included. Condition No.8.d refers.
Shannon Airport Authority		Included/ excluded in Schedule of Conditions
Aviation	Visual Aids for Denoting Obstacles	Included. Condition No.19. refers.
	Pre-commencement approval of crane activity	Included. Condition No.19. refers.

	IAA Electronic Air Navigation Obstacle Dataset	Included. Condition No.19. refers.
Irish Aviation Authority		Included/ excluded in Schedule of Conditions
Aviation	Aeronautical obstacle warning lights	Included. Condition No.19. refers
	As constructed coordinates	Included. Condition No.19. refers
	Pre-commencement approval of crane activity	Included. Condition No.19. refers
Inland Fisheries Ireland		Included/ excluded in Schedule of Conditions
	Advance notice of tree felling.	Included. Condition No.12.c refers.
	Consultation and approval on culvert and clear-span bridge crossing works.	Included. It is considered that this is covered by the scope of Condition No.12.c
	Controls on water quality, riverbank encroachment, bridge decks, culverts and riparian zones.	Included. It is considered that this is covered by the scope of Condition No.5, 10 and 12.
	Construction controls including IFI agreement on final CEMP and supervision of EcOW.	Included. It is considered that this is covered by the scope of Condition No.5, 10 and 12.
DHLGH, Development Applications Unit - Archaeology.		Included/ excluded in Schedule of Conditions
	Pre-construction test excavation	Included. Condition No.12.b & 20. refers.
	Construction stage archaeological monitoring.	Included. Condition No.21 refers.

15.27.I recommend a design flexibility condition in accordance with Circular Letter PL 11/2023. Condition No.4 refers.

15.28.Otherwise, in addition to standard conditions, and in the event that the developer does not utilise the Government's Renewable Energy Support Scheme (RESS) but instead enters into a contract with a third party to supply renewable energy, I recommend a condition requiring a community gain proposal to be submitted to the planning authority. Condition No.17 refers.

16.0 Environmental Impact Assessment (“EIA”)

16.1. Statutory Provisions

- 16.2. 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 has been transposed into Irish Law, with requirements now set out in the PDA 2000 and the PDR 2001.
- 16.3. Part 1 of Schedule 5 of the PDR 2001 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 also required. The proposed development falls within the definition of a project under the EIA Directive as amended by Directive 2014/52 (execution of constructions works) and falls within the scope of Class 3 (i) of Part 2 of the Fifth Schedule of the Regulations:

3. Energy Industry

(i) ‘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’.

- 16.4. The proposed development with a total of 7no. turbines and with an estimated combined generating capacity of 46.2MW exceeds these thresholds and is therefore subject to mandatory EIA.

16.5. EIA Structure

- 16.6. This section of the report comprises the environmental impact assessment of the proposed development in accordance with PDA 2000 and the associated Regulations, which incorporate the European Directives on environmental impact assessment (Directive 2011/92/EU as amended by 2014/52/EU). Section 171 of the PDA 2000 defines EIA as:

- a. consisting of the preparation of an EIAR by the applicant, the carrying out of consultations, the examination of the EIAR and relevant supplementary information by the Board, the reasoned conclusions of the Board and the integration of the reasoned conclusion into the decision of the Board, and
 - b. includes an examination, analysis and evaluation, by the Board, that identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on defined environmental parameters and the interaction of these factors, and which includes significant effects arising from the vulnerability of the project to risks of major accidents and/or disasters.
- 16.7. Article 94 of the PDR 2001 and associated Schedule 6 set out requirements on the contents of an EIAR.
- 16.8. This EIA section of the report is therefore divided into two sections. The first section assessed compliance with the requirements of Article 94 and Schedule 6 of the Regulations. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant effects of it on the following defined environmental parameters, having regard to the EIAR and relevant supplementary information:
- Population and human health,
 - Biodiversity, with particular attention to species and habitats protected under the Habitats Directive 92/43/EEC and the Birds Directive 2009/147/EC,
 - Land, soil, water, air and climate,
 - Material assets, cultural heritage and the landscape,
 - The interaction between the above factors, and
 - The vulnerability of the proposed development to risks of major accidents and/or disasters.
- 16.9. The assessment also provides a reasoned conclusion and allows for integration of the reasoned conclusion into the Boards decision, should they

agree with the recommendation made. Adequacy of the consultations carried out by the applicant is also considered below.

16.10. Issues Raised in Respect of EIA

16.11. Issues raised in respect of EIA by parties to the appeal are:

- Adequacy of expertise and independence of authors
- Adequacy of consultation
- Adequacy of iterative design process
- Adequacy of alternatives
- Compliance with the Aarhus Convention (redaction of Confidential Survey Data Appendix 7-5(a) – (d) inc.)
- Compliance with SEA, EIA, Birds, Habitats and WF Directives.
- Adequacy of design flexibility for the purposes of assessing effects under EIA
- Impacts on population and human health (shadow flicker, noise, property values, community, business and tourism, light pollution and safety concerns), biodiversity (including adequacy of Bat surveys, absence of Marsh Fritillary Report, proximity to Special Areas of Conservation), Birds (including impacts on Hen Harrier and Barn Owl), land and soil (including risk of peat slide), water (including pollution risks and downstream impacts on Natura 2000 sites), climate and air (including emissions, carbon footprint and absence of community or green dividend), traffic (including inadequacy of road infrastructure, legal interest and source of concrete/aggregate materials), cultural and heritage assets (including archaeology and protected structures), landscape and visual effects (on residential amenity and from designated scenic roads), material assets (including telecommunications and aviation).
- Cumulative effects with other wind energy developments (permitted and proposed).

17.0 Compliance with Requirements of Article 94 and Schedule 6 of the Planning & Development Regulations, 2001.

17.1. Compliance with the requirements of Article 94 and Schedule 6 of the PDR, 2001 is assessed below.

Article 94(a) Information to be contained in an EIAR (schedule 6, paragraph 1)
A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development (including the additional information referred to under section 94(b)).
A comprehensive description of the development is contained in Chapter 4 of the EIAR including location, layout, project components, access and transportation, community gain, site drainage, construction methodologies, operation and decommissioning.
A description of the likely significant effects on the environment of the proposed development (including the additional information referred to under section 94(b))
An assessment of the likely significant effects of the development (direct, indirect, temporal and cumulative) on the different environmental parameters, is carried out for each of the technical chapters (topic Chapters 5 to 17) of the EIAR. Section 2.9 of EIAR Chapter 2 sets out the overall approach to cumulative impact assessment and this is further addressed under each topic. I am satisfied that the assessment of significant effects is comprehensive and robust and enables decision making.
A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b)).
The EIAR includes designed in mitigation measures and measures to address potential adverse effects identified in technical studies. These, and arrangements for monitoring, are summarised in Chapter 18, Table 18-1 of the EIAR (Schedule of mitigation and monitoring proposals) and are otherwise set out in the relevant Chapters of the EIAR and Appendix 4-3 (CEMP), Appendix 4-4 (Surface Water Management Plan), Appendix 4-7 (Decommissioning Plan), Appendix 6-2 (Bat Report), Appendix 6-4 (Biodiversity Enhancement Management Plan), Appendix 7-6 (Collision Risk Assessment) and Appendix 8-1 (Geotechnical and Peat Stability Report). Mitigation measures comprise standard good practices and site-specific measures and are largely capable of offsetting significant adverse effects identified in the EIAR.
A description of the reasonable alternatives studies by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment (including the additional information referred to under section 94(b)).
A description of the alternatives considered is contained in Section 3.2 of Chapter 3 of the EIAR. The alternatives considered include, 'do nothing', strategic site selection, alternative turbine numbers and specifications, alternative layout and design, alternative design of ancillary structures, alternative grid connection and cable route options, alternative transport route and site access and alternative mitigation measures. The main reasons for opting for the current proposal were based on minimising environmental effects. I am satisfied therefore, that the applicant has studied reasonable alternatives in assessing the proposed development and has outlined the main reasons for opting for the current proposal before the Board and in doing so the applicant has taken into account the potential impacts on the environment. Further detail on the alternatives considered is set out below.

Article 94(b) Additional information, relevant to the specific characteristics of the development and to the environmental features likely to be affected (Schedule 6, Paragraph 2).
A description of the baseline environment and likely evolution in the absence of the development.
A description of the baseline environment is included in each technical chapter of the EIAR and an assessment of the likely evolution of it, in the absence of the development.
A description of the forecasting methods of evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved.
The methodology employed in carrying out the EIA, including the forecasting methods is set out, in each of the individual chapters assessing the environmental effects. The applicant has indicated in the different chapters where difficulties have been encountered (technical or otherwise) in compiling the information to carryout EIA. I comment on these, where necessary in the technical assessment below and for the reasons stated, I am satisfied that forecasting methods are adequate in respect of likely effects on biodiversity etc. I note that no technical difficulties were encountered in the preparation of the EIAR (Section 1.9 of Chapter 1) and I have not identified any areas where any significant impediments to the assessment are evident.
A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it.
This issue is specifically dealt with in Chapter 16 of the EIAR. Specific risks have been identified in relation to the project's vulnerability to fire/explosion, contamination, collapse/damage to structures and traffic accident. These risks are reasonable and are assessed in my report.
Article 94c A summary of the information in non-technical language.
This information has been submitted as a separate standalone document 'Non-Technical Summary'. I have read this document, and I am satisfied that the document is concise and comprehensive and is written in a language that it easily understood by a lay member of the public.
Article 94(d) Sources used for the description and the assessments used in the report.
The sources used to inform the description, and the assessment of the potential environmental impact are set out in each chapter. I consider the sources relied upon are generally appropriate and sufficient.
Article 94(e) A list of the experts who contributed to the preparation of the report.
A list of the various experts who contributed to the report are set out in Section 1.8 and Table 1-4 in Chapter 1 of the EIAR. Where relevant the introductory section of each of the chapters also gives details of the individual's expertise, qualifications which demonstrates the competence of the person in preparation of the individual chapters within the EIAR. I am satisfied that the EIAR has been prepared by experts with competency in the technical subject areas.

17.2. Alternatives Considered.

17.3. Do nothing – In this scenario the existing land use would continue, the environmental effects would be neutral and the opportunity to capture the available renewable energy resource would be lost. It was also considered likely that trends of population decline in the study area would continue in the

absence of investment and job creation. This is against the limited environmental consequences of the proposed development set out in the EIAR (Table 3-1) where existing land uses could largely continue and there is an opportunity to enhance the employment and investment in the local area and capture the available resource contributing to national and international climate targets.

- 17.4. Alternatives site locations – At the time of site selection the applicant considered planning legislation and regulations surrounding offshore wind energy to be limited. The certainty in relation to onshore planning policies attracted the developer to an onshore project. A strategic approach to site election (Section 3.2.3.1, EIAR) was then taken over a two-phase process with Phase 1 examining proximity to the National Grid and Phase 2 screening the site against a number of criteria including: residential dwelling locations, transport corridors, Electricity Transmission Corridors, Waterbodies/Courses, Designated Sites and existing/permitted/proposed windfarms. This process resulted in the candidate site. The alternative was to bring forward a site that did not pass the screening process. Other sites emerged in Co. Carlow and Co. Kilkenny, and they are subject to separate planning applications. The candidate site was then further examined which confirmed alignment with national and local policy, that it does not overlap with any environmental designations, is accessible to the national grid and has a relatively low population density with appropriate wind speeds.
- 17.5. Alternative renewable energy technologies – The EIAR compares the proposed development to an alternative renewable energy source, solar (Table 3-2). It considers that land take would be considerably more (c.73.9ha vs 8.4ha) with potential for higher environmental effects on Traffic & Transport (construction phase) and Biodiversity and Birds. Positive impacts would be reduced noise, visual effects and no potential for shadow flicker. A combination of wind and solar was ruled out for land availability reasons. Overall it was determined that the smaller land take and greater positive effect from a climate and air quality perspective meant that wind energy was the

most efficient method of electricity production with less potential for significant environmental effect.

- 17.6. Alternative turbine number/model- The EIAR considers the use of smaller turbines but considers that this would necessitate a much larger number (c.18) to achieve the same output range and would result in less efficient use of the wind resource available, greater land take and supporting infrastructure with consequential environmental effects. The comparison of environmental effects is set out in Table 3-3. Chapter 1, Table 1-3 of the EIAR also details three scenarios where a range of turbines within the parameters of the development description are considered and assessed.
- 17.7. Alternative layout/development design (including the onsite 38kv substation and met mast) – This is considered in Section 3.2.6 of the EIAR. Layout of the proposed development has been an informed and collaborative process with input from the range of technical specialists, detailed constraints and facilitators mapping and appropriate buffer zones (Figure 3-1), detailed site investigations and community engagement. The proposed final 7 turbine layout went through 4 separate iterations and Figure 3-2 to 3-5 gives an indication of the design process. A comparison of environmental effects when the chosen option is compared against earlier iterations is set out in Table 3-4. The chosen option has been designed to avoid or mitigate impacts on biodiversity, soils and subsoils, surface water or groundwater quality, noise, telecommunications and landslide and peat movement through a smaller development footprint and maintenance of appropriate buffers. In relation to access tracks, use and upgrade of existing agricultural and forestry tracks was favoured vs the higher environmental impacts of constructing new tracks.
- 17.8. Alternative design of ancillary structures (construction compounds and borrow pits) – the use of a single temporary and centrally located construction compound was favoured vs the alternative of multiple smaller compounds. The central location facilitates the most efficient flow of construction vehicles reducing emissions and potential for dust. Further information is set out in Section 3.2.6 of the EIAR. The majority of crushed stone and hardcore

materials required for the construction phase will be sourced through a combination of the onsite borrow pit and the cut and fill exercise. This was deemed environmentally preferable to the importation of stone and hardcore and will reduce vehicle emissions and potential for dust arising.

- 17.9. Alternative Grid Connection Cabling Route Options – Whilst overhead lines are less expensive and allow for easier repairs, underground cables were preferred as the grid connection method as they have no visual impact. From an early stage the Ardnacrusha 110kV substation was identified as the most viable option due to its proximity to the site. Three grid connection route options were considered, and these are detailed in Figure 3-6 and Table 3. Option 1a (the chosen route) was favoured as it was the shortest route leading to shortest construction period and therefore the least potential for noise, traffic, emissions, climate, air and sensitive receptors (Table 3-6).
- 17.10. Alternative Transport Route and Site Access – Section 3.2.9 examines alternative options for turbine delivery, with wind turbine components being imported from overseas and transported overland to the site. Galway Harbour, Port of Waterford, Port of Ringaskiddy and Shannon Foynes Port were all considered as ports of entry. Whilst all four ports offered potential the Port of Foynes was chosen due to its proximity, the available road network between the Port and site and the storage capacity for wind farm infrastructure. Two turbine delivery route options were considered (Option A & B) and these are shown in Figure 3-8. Option A was preferred as it made use of the existing road network insofar as possible.
- 17.11. Alternative mitigation measures – These are considered in Section 3.2.10 with the key message being mitigation by avoidance through selection and design rather than encroaching into environmentally sensitive areas. Where habitat loss occurs, it is mitigated by habitat enhancement lands and improved connectivity as further described in Appendix 6-4. Forestry felled will be replaced offsite with no net loss. The alternative is to encroach on environmentally sensitive areas of the site and accept potential effects and risks.

17.12.Compliance with the Aarhus Convention.

17.13.Parties to the appeal were concerned that the redaction of the confidential survey data included in Appendix 7-5(a)-(d)(inc) of the EIAR precluded them from having full access to environmental information necessary to enable an assessment of environmental effects and infringed their rights under the Aarhus Convention. The information contained within the said appendices includes details of the bird survey effort. The material environmental information contained in the said Appendices is set out in Chapter 7 of the EIAR and I am satisfied that the confidential information redacted therefrom is not such that would militate against ability of the public to discern the likely environmental impacts of the proposed development on birds.

17.14.Compliance with SEA, EIA, Birds, Habitats and WF Directives.

17.15.These matters are addressed in the planning assessment, EIA and Stage 2 AA (appendix 2) sections of my report.

17.16.Design Flexibility

17.17. This matter is addressed in the planning assessment section of my report.

17.18.Consultations

The application has been submitted in accordance with the requirements of the PDA 2000 and the PDR, 2001 in respect of public notices. Details of the applicants scoping work and consultations are set out in section 2.7 and 2.8 of the EIAR Chapter 2. Appendix 2-2 provides a detailed report of the public consultation exercise that has been carried out. The applicant has carried out public consultation beginning in February 2022 and consisting of engagement with near neighbours, local representatives and community groups including door-to-door engagement (leaflet drop) with neighbours within 2km of the proposed turbines. A Project website was also launched (the same week), and a Community Engagement Team appointed, and a dedicated contact email address created. Drop-in information clinics were held on 28th June, 26th July, 16th August and 26th September 2022. These clinics were advertised in a local

newspaper with attendance of 50 persons across all clinic dates. A public exhibition event was held in the Lakeside Hotel, Killaloe on 21st November, 2023 with advance notice published in a local newspaper. Local elected representatives and members of the Oireachtas were invited to the event, which was attended by 20 persons. An Online Virtual Consultation Room was also created and project information was made available in print and digital form via these events and platforms. Submission have been received from statutory bodies and third parties and are considered in this report, in advance of decision making.

I am satisfied, therefore, that appropriate consultations have been carried out and that third parties have had the opportunity to comment on the proposed development in advance of decision making.

17.19.Compliance

Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and supplementary information provided by the developer is sufficient to comply with Article 94 of the PDR, 2001.

18.0 **Assessment of Likely Significant Effects**

18.1. This section of the report sets out an assessment of the likely environmental effects of the proposed development under the following headings, as set out in Section 171 A of the PDA, 2000 (as amended):

18.2. In accordance with Section 171A of the PDA, 2000, which defines EIA, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR and submissions received and identifies, describes and assesses the likely direct and indirect significant effects (including cumulative effects) of the development on these environmental parameters and the interaction of these. Each topic section is therefore structured around the following headings:

- Issues raised in the appeal,
- Examination of the EIAR

- Analysis, Evaluation and Assessment: Direct and indirect effects.
- Conclusion: Direct and indirect effects.

18.3. Population and Human Health

18.4. Issues Raised

- 18.5. Issues raised in respect of population and human health are the effects of the development on Kilbane Village, population profile and community growth, impacts on residential amenity (visual impacts, noise, shadow flicker, light pollution), property values, landscape and visual effects, on primary schools, effects during construction (noise, emissions, traffic, disruption) and health effects including on those with ASD syndrome (including low frequency noise, infrasound and AM, sleep disturbance and anxiety), business effects, and safety concerns.
- 18.6. The issues raised in relation to noise, landscape and visual effects and traffic (inc. emissions) are dealt with in different technical chapters of the EIAR and addressed in the corresponding environmental topic sections of this report.

18.7. Examination of the EIAR

Context

- 18.8. Chapter 5 of the EIAR deals with population and human health. It assesses the likely effects of the development on population and human health and the key issues examined in this chapter includes population, human health, employment and economic activity, land-use, residential amenity, property values and health and safety. Chapter 12 of the EIAR deals with Noise and Vibration and this is considered in the next topic section.

Associated Figures and Appendices are:

- Appendix 5-1 Windfarms & Health Literature Review
- Appendix 5-2 House Prices Study
- Appendix 5-3 Comparative Shadow Flicker Report

- 18.9. The assessment is undertaken in accordance with guidance set out by the Environmental Protection Agency (“EPA”)⁹, and National and International policy and guidance. Shadow Flicker is dealt with in Section 5.8 of Chapter 5 and the methodology and assessment criteria has regard to government guidelines on wind energy (WEDG, 2006 and dWEDG,2019). Shadow flicker was modelled against three turbine scenarios as detailed in Table 5-8, with the potential impacts not exceeding that predicted for scenario 1¹⁰ using the maximum proposed rotor diameter of 155m. The modelling assumes 100% sunshine during daytime hours.
- 18.10. The governments’ WEDG 2006 recommend that shadow flicker at neighbouring properties, within 500m, should not exceed 30 hours per year or 30 minutes per day. The dWEDG 2019 recommend elimination of shadow flicker through design or automated turbine shutdown with conditions to ensure that no dwelling or affected property will experience shadow flicker.
- 18.11. Section 4.6 of the EIAR sets out the details of the Community Gain Proposal. Consistent with the terms of the Renewable Energy Support Scheme¹¹, it provides a contribution of €2 for each megawatt hour (MWh) to a community fund for the first 15 years of operation, expected to be in the region of €240,000 annually. The fund will abide by the broad principles of RSES providing that, inter alia, €1,000 will be provided to all dwellings located within one km of the development and a minimum of 40% of the fund will be paid to not-for-profit community enterprises.
- 18.12. Limitations are considered in Section 5.8.5.1 of Chapter 5 for shadow flicker with computer models known to produce an over-estimate of possible impact due to the limitations and assumptions set out including: the sun shining during all daylight hours, the turbine rotor is turning at all times, turbines are turned on at all times and the rotor is considered as a sphere to present its

⁹ Guidelines on the Information to be Contained in Environmental Impact Assessment Reports -EPA, 2022.

¹⁰ Max RD (155m),Min HH (102.5m) with TH (180m)

¹¹ Published by the Department of Communications, Climate Action and Environment (Feb. 2020)

maximum aspect to observers in all directions. No other assumptions or data gaps were identified. Statements of authority are included.

Baseline

- 18.13. There are 28 no. habitable dwellings and 1 no. derelict dwelling within one kilometre of any proposed turbine location. The closest habitable dwelling is approx. 720m from turbine T03. The derelict dwelling is 640m from Turbine T03. There are 143 no. properties within 100m of the proposed Grid Connection Rote.
- 18.14. The EIAR describes a 'Population Study Area' consisting of the Lackareagh, Fahymore and Killokennedy DED's within which the proposed windfarm is located (Fig 5-1 of EIAR Chapter 5 refers) and describes population trends in the context of the 2016 and 2022 Census. The study area has a total population of 655 (as of 2022¹²), a total land area of approx. 60.5km² and the EIAR describes a low population density of 10.85 persons per km² (recorded in 2022).
- 18.15. In terms of employment and economic activity the EIAR describes the percentage of persons in the labour force (59.3%) as being generally consistent with state (61.2%) and county levels (59.4%), with the highest other percentage being 'retired' individuals similar to state and county populations. Section 5.3.6.2 of the EIAR discusses employment and investment potential in the Irish wind energy industry in the context of CAP 2024 and Ireland's renewable energy targets (80% by 2030 with a target of 9GW from onshore wind). Reference is made to reports in 2009, 2014 (Irish Wind Energy Association ("IWEA")), 2017 and 2022 (WindEurope) in support of job creation and investment potential.
- 18.16. The nearest national school ("NS") to the proposed windfarm is noted as Bridgetown NS approx. 4km to the south at its closest point (T07) with Broadford & Kilbane NS located approx. 4.9km southwest at its closest point (T07). A number of amenities and community facilities including sports clubs,

¹² CSO Census of the Population 2022

youth clubs, recreational areas, retail and personal services are located in Bridgetown, Broadford and Killaloe and the East Clare Way (“ECW”) walking route which passes through the site for approx. 2.4km via the Gap Road (L7080).

18.17. The EIAR describes land-use within the proposed windfarm site as coniferous forestry and agriculture and within the GCR as public road corridor, public open space, pastures, coniferous forestry, agriculture and natural vegetation.

18.18. The EIAR refers to Tourism in Section 5.4. The value of tourism to the national economy and as a source of employment is noted and Failte Ireland¹³ reports are cited to evidence tourist numbers and total revenue generated for the Mid-west Region and Co. Clare specifically. Tourist attractions in Co. Clare are described and listed¹⁴ in Section 5.4.1.1, with the East Clare Way specifically noted as pertaining to the subject site. This section refers to tourist attitudes to windfarms and research which largely concludes that windfarms do not cause a decrease in tourism employment either at a local or national level¹⁵ together with 2007¹⁶ findings (upheld in 2012¹⁷), that there is generally a positive disposition among tourists to wind development in Ireland. The EIAR refers to public perception of Wind Energy in Section 5.5. and refers to research carried out by SEAI in 2003, 2017 and 2023, by the school of School of Geography & Geosciences, University of St. Andrews, Fife and the Macauley Institute, Aberdeen, and an opinion poll by Wind Energy Ireland in 2022. This research found a generally positive attitude to windfarms including by those living in close proximity to them.

18.19. The EIAR refers to Human Health in Section 5.6. and section 5.6.1.1 refers specifically to a range of international Health Impact Studies and a HSE

¹³ 2017 Topline Tourism Performance by Region, Failte Ireland, August 2018 and Key Tourism Facts 2019, Failte Ireland, March 2021.

¹⁴ Source: www.visitclare.ie

¹⁵ BiGGAR Economics ‘Wind Farms and Tourism Trends in Scotland’, 2016

¹⁶ Failte Ireland, ‘Visitor Attitudes on the Environment: Wind Farms’

¹⁷ Failte Ireland, ‘Visitor Attitudes on the Environment: Wind Farms – Update on 2007 Research’

position paper (2017)¹⁸ with the current evidence available indicating that wind turbines are not related to adverse health effects (arising from noise, vibration and shadow flicker). The EIAR refers to the DoEHLG 2006 Guidelines which identifies no specific safety considerations in relation to the operation of wind turbines, confirms that the blades are designed in such a way that ice throw/projection is not a significant risk, that the site is within an area of low icing frequency¹⁹ and that design will prevent an increase in the likelihood of lightning strikes at the subject site. Section 5.6.3. refers to the electromagnetic fields associated with the proposed underground cables and confirms that they comply fully with the international guidelines for ELF-EMF set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) which will not be exceeded at any distance even directly above the cables. Wind farms are not a recognised source of pollution and are not an activity requiring licensing under the Environmental Protection Agency Licensing Act, 1992 (as amended). The proposed Windfarm is not regulated, or close to any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations i.e. SEVESO. Section 5.6.5. of the EIAR refers to natural disasters and finds limited potential for these to occur at the site as Ireland is geologically stable with a mild temperate climate. Potential is therefore limited to flooding, fire and landslide events. Flooding and Landslide are addressed in the respective 'water' and 'lands, soils and geology' section of this report with the risk of significant environment effects, or potential impacts on human health, from fire being limited having regard to spacing and distance from properties. Section 5.7 of the EIAR refers to property values and refers to a single 2023 study in an Irish context by CERIS²⁰, which found a potential decrease in property values of -14.7% within a 0-1km radius of a wind turbine. The EIAR considered that this single study did not adequately represent the broader landscape of Irish rural housing and therefore referred to international research in 2009, 2013, 2014, 2016 and 2023 which

¹⁸ Position Paper on Wind Turbines and Public Health, HSE, Public Health Medicine Environment and Health Group, February 2017

¹⁹ International Energy Agency (IEA) Ice Class 1 category (low icing frequency)

²⁰ Centre for Economic Research on inclusivity and Sustainability

demonstrates that wind farms have the potential to impact property values in immediate local areas only on the basis of 'anticipated' impacts with this proven to reduce throughout the operational life of a windfarm.

18.20. For the assessment of shadow flicker, the study area is 10 times the (maximum) rotor diameter from each turbine or 1.55km. There are 64 no. properties in this study area of which 6 no. are participating properties, 63 no. are dwellings, and 1 no. is derelict. There are no dwellings within 500m of individual turbines and the nearest receptor to the windfarm is dwelling ID No.2 with a setback of 720m from T03. There is a derelict property 640m to the southwest of T03.

18.21. The assessment of cumulative effects for shadow flicker considered any existing, permitted or proposed windfarms which overlapped with this projects 10 times rotor diameter study on the basis of a 10 times rotor diameter distance from another windfarm. This resulted in the permitted Fahy Beg and Carrownagowan Windfarms being included in a cumulative assessment of shadow flicker. The results of cumulative shadow flicker modelling are shown in Table 5-12 of EIAR Chapter 5. Otherwise, the cumulative assessment of potential impacts on population and human health considered health & safety, employment and economic activity, tourism and amenity, land-use, and property values, with noise, air, climate, traffic, telecommunications and visual impacts addressed in separate technical chapters of the EIAR and corresponding environmental topic sections of this report.

Potential Effects

18.22. The EIAR identifies the potential for a range of environmental effects on population and human health. The likely effects (potential direct, indirect and cumulative) in the absence of mitigation and as identified in the EIAR, are summarised in Table PHH1 below:

Table PHH1: summary of potential effects (*population and human health*)

Project Phase	Potential Effects
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Do Nothing	- Existing land uses would continue - The opportunity to capture the renewable energy resource contribute to renewable energy and emissions reductions targets would be lost. - The opportunity to generate local employment and investment would be lost.
Construction Phase	<i>Health & Safety:</i> - Presence of a construction site and travel on the public road (to and from the site), potential hazard to construction workers if site rules not properly implemented. Short-term potential significant negative impact. <i>Employment & Investment:</i> - Most construction workers and materials will be sourced locally, sustaining employment. Approx. 80-100 jobs will be created during construction, operation and maintenance phases. Construction period 18-24mts. Short-term moderate positive impact. - Associated salaries and wages will increase household spending, demand for goods and services and retail and business cashflow. Short-term slight positive indirect impact. - Skills transfer to local workforce – long-term positive impact. - Up-skilling and training of local staff leading to additional opportunities – long term moderate positive indirect impact. - Rates payments will contribute significant funds to Clare Co.Co. and provision of public services. - Community Benefit Fund will support and facilitate a range of community, youth, sport, education, environmental type projects. <i>Population:</i> - No impact on population trends, density, household size or age structure. <i>Land-Use:</i> - Existing land-use will continue on site of proposed windfarm with a small section of commercial forestry felled. This is unavoidable and acceptable. No change to land-use as a result of the GCR. <i>Noise and Vibration:</i> - Heavy machinery and construction work will result in an increase in noise levels, with excavation and pouring of turbine bases the noisiest activities. Effects will be short term in duration. Temporary, slight negative impact. - Heavy machinery and construction work on the GCR has potential to cause a nuisance to sensitive receptors close to the route. Short-term negative impact on human health. <i>Air Quality:</i> - Transfer of mud to the public road may cause nuisance to residents and other road users. Imperceptible, short term. - Dust and exhaust emissions has the potential to cause a nuisance to sensitive receptors in the immediate vicinity of the site. Short-term, slight, negative impact on air quality.

	<i>Traffic:</i> - Abnormal sized loads carrying turbine components will have a negative temporary, slight effect on local road users. - The transient nature of the GCR construction works has potential for short term nuisance to local road users as it moves along the public road network giving rise to a temporary slight negative impact. <i>Property Values:</i> - Potential for long-term slight negative impact. <i>Tourism:</i> Short-term slight negative impacts on the East Clare Way associated with construction. Proposed look out point will result in a slight positive impact. No other impacts predicted on tourism infrastructure. Major Accidents and Natural Disasters: - Risk of contamination and Fire/Explosion in occurrence of Major Accident or Natural Disaster. No specific potential effect identified. <i>Shadow Flicker:</i> - No construction phase impacts. <i>Residential Amenity:</i> Short-term slight negative impacts associated with air, traffic, noise and vibration emissions from construction traffic and machinery (as referenced above).
Operational Phase	<i>Health & Safety:</i> - Rigorous safety checks will ensure risks to staff, landowners and public are imperceptible. Potential long-term, slight impact. <i>Employment and Investment:</i> - Maintenance and control of the windfarm will create approx. 2-3 jobs having a long-term slight positive indirect effect. - Rates payments will contribute significant funds to Clare Co.Co. and provision of public services. - Rental income, increased household spending, demand for goods and services will have a long-term slight positive indirect effect. - Community Benefit Fund will support and facilitate a range of community, youth, sport, education, environmental type projects. <i>Population:</i> No impact predicted. <i>Land-use:</i> No potential impacts specified. <i>Noise and Vibration:</i> - At NAL11 a small exceedance of the site-specific noise limit was predicted for operational wind turbine noise during nighttime from 7

	ms⁻¹ onwards (1.2dB). This would be a potential significant effect. 'Significant' based on a precautionary approach. - At BNAL06 the rating level exceeds the background sound level by a maximum of +3dB during the nighttime where a minor significant effect is predicted for BESS operational noise. <i>Traffic:</i> No potential impacts specified. <i>Property Values:</i> - Potential for long-term slight negative impact. <i>Tourism:</i> - Potential for long-term imperceptible impact on East Clare Way. - It is not considered that there will be an adverse impact on tourism infrastructure. <i>Major Accidents and Natural Disasters:</i> - Risk of fire/explosion in occurrence of Major Accident or Natural Disaster. No specific potential effect identified. <i>Shadow Flicker:</i> - Assuming theoretical precautionary conditions, it is predicted that 45 no. properties may experience daily and annual shadow flicker occurrences. Potential long-term moderate negative impact on Sensitive Receptors. <i>Residential Amenity:</i> - Potential impacts could arise due to noise, shadow flicker, changes to visual amenity or interference with telecommunications. - The windfarm will have limited visibility. - No impact on telecommunications predicted. <i>Renewable Energy Production and Reduction in Greenhouse Gas Emissions:</i> Long-term significant positive impact. <i>Interference with Communication Systems:</i> - Potential negative, moderate, long-term effects on users of the Eir communication link.
Decommissioning Phase	Any impact and consequential effect which occurs during the decommissioning phase will be similar to the construction phase, but to a lesser extent.
Cumulative and In-Combination Effects	<i>Health & Safety:</i> - No cumulative impacts. <i>Employment and Economic Activity:</i> - Any permitted wind farms will contribute to short-term employment potential during construction and all windfarms provide the potential for long-term maintenance employment, which together with continuing forestry activities. Long-term moderate positive impacts.

	<i>Tourism and Amenity:</i> • No specific impacts. The project could support development of the wider area, attracting local and new visitors. <i>Land-use:</i> • No significant cumulative impact on land-use. <i>Property Values:</i> • Short-term imperceptible negative cumulative impact. <i>Shadow Flicker:</i> • Potential moderate, negative, long-term cumulative effect (with Fahybeg and Carrownagowan).
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18.23.Mitigation

18.24. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and are also set out in each topic chapter. Measures are extensive and in relation to Population and Human Health and Noise include:

- Health & Safety measures proposed under the Construction and Environment Management Plan (CEMP), (Appendix 4-3) including the appointment of PSDP and PSCS roles, and the operational phase Health & Safety Plan,
- Standard Best Practice measures for construction noise control,
- Core working hours 07:00 to 19:00 Monday to Friday, 07:00 to 13:00 Saturday and no working on Sundays or Public Holidays (*with some limited exceptions, borne of necessity, to be agreed in advance*)²¹.
- Rolling construction method for the proposed GCR with 100-150m of road constructed and back filled each day, providing evening and nighttime access.
- A Construction Traffic Management Plan (TMP), (Appendix 15-2),
- Micro siting of T07 to ameliorate potential communications interference,

²¹ Delivery and unloading of abnormal loads, health & safety requirements, to ensure optimal use of fair weather for concrete deliveries, erection of blades or dismantling of cranes.

- A Shadow Flicker Mitigation Strategy including Operation to be monitored by Supervisory Control and Data Acquisition (SCADA) system to prevent incidences of shadow flicker,
- Implementation of mitigation measures outlined in relation to noise, OAM, vibration, dust, traffic, shadow flicker, telecommunications and visual amenity to prevent effects on residential amenity.
- Targeted use of mode management for a limited range of wind speeds and directions for the nighttime period to demonstrate that noise limits can be met at NAL11.

18.25. Residual Effects

18.26. With the implementation of mitigation measures, the residual effects are set out in Section in Section 5.10.2.1 to Section 5.10.5.6 of Chapter 5. The EIAR predicts the following residual effects with no residual effects predicted for a number of areas such as population, Construction Noise & Vibration, shadow flicker, major accidents and material assets:

- Health & Safety - short term potential slight negative residual effect during construction. Long-term, imperceptible residual effect during operation.
- Employment & Investment – short-term moderate positive indirect impact (from salaries, wages). Long-term slight positive effect at operational stage due to Community Gain Proposal.
- Land-Use – permanent slight negative effect (to facilitate development footprint and infrastructure).
- Air Quality – short-term imperceptible negative during construction. Long term significant positive impact during operation (renewable energy production and reduction in greenhouse gas emissions and other air pollutants).
- Traffic – short-term slight negative during construction and long-term negative and imperceptible during operation.
- Property Values – long-term negative imperceptible.

- Tourism – short-term, negative slight during construction only.
- Residential Amenity – short-term negative imperceptible effect (from construction and noise, traffic, vibration and emissions). None at operational stage.

18.27. These provide that no significant negative residual effects on population and human health will arise with the exception of BNAL06 where no mitigation is proposed in relation to predicted noise from the BESS and **a minor significant effect is predicted** during the nighttime. A **long-term significant positive effect** is predicted on air quality.

18.28. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.29. I have examined, analysed and evaluated Chapter 5 of the EIAR, all of the associated documentation and submissions on file in respect of population and human health. I am satisfied that the applicant's understanding of the baseline environment, is comprehensive and that the key impacts in respect of likely effects on population and human health as a consequence of the development have been identified as set out in the EPA Guidelines on EIA and EIAR.

18.30. The effects of the development on noise and vibration, landscape, traffic and tourism are addressed in separate technical chapters of the EIAR and primarily considered in the corresponding environmental topic sections of this report. Relevant conclusions are however carried across in this section.

18.31. In general, given the relatively modest footprint of the development and its nature and location in a rural area with a low population density, I am satisfied that the construction and operation of the development will not give rise to significant adverse effects on employment in the area, settlement or land use patterns, baseline population or demographic trends. There will be economic benefits associated with the Community Gain proposal and opportunities for employment during construction and operational stages and I acknowledge the published research to which the applicant refers in this regard and the prediction that the associated positive effects will be moderate (construction)

and slight (operational). Parties to the appeal have raised a number of issues in respect of population and human health which I address below under the following substantive headings:

- shadow flicker,
- noise,
- Residential amenity (including light pollution)
- property values,
- Impacts on National Schools
- health,
- population and business, and
- safety concerns

Shadow Flicker

18.32. The applicant's assessment of shadow flicker is conservative and based on theoretical precautionary conditions and a study area based on 10 times the rotor diameter, or 1.55km. The permitted Fahy Beg and Carrownagowan wind farms are considered in the cumulative assessment. It is predicted that 45 no. properties may experience daily shadow flicker occurrence exceeding the maximum daily allowance of 30 minutes in the absence of any turbine control measures, with the same dwellings anticipated to experience annual shadow flicker occurrences. The cumulative shadow flicker analysis indicates that 5 no. properties (*House ID 28, 39, 42, 48 & 49*) could be affected when considering both the proposed windfarm and the permitted Fahy Bed wind farm. The actual occurrence and/or duration of shadow flicker at these properties is likely to be significantly reduced or eliminated by screening, cloud cover, built form, elevational and orientational variations in properties. Notwithstanding, the applicant proposes to exceed the shadow flicker guidelines set out in the WEDG 2006 and commits to adopting the guidelines set out dWEDG, 2019, which advocates zero shadow flicker at any existing nearby dwelling or other relevant affected sensitive property. The applicant

proposes to achieve this through the mitigation measures outlined in Section 5.10.3.10 to ensure there will be no occurrence of shadow flicker (cumulative or otherwise) for any property within the 1.55km study area.

18.33. I have examined the mitigation measures proposed by the applicant which involves a sequential progression through a suite of responding measures which eventually escalate to turbine control measures. The approach can be summarised as follows:

- Where exceedances have been predicted by modelling software, a site visit will be undertaken to determine the level of occurrence, existing screening and window orientation.
- Upon commissioning prediction data will be used to select dates on which a shadow flicker event could be observed at affected properties and weather conditions will be recorded together with house ID number, time, duration, observation point co-ordinates, nature of receptor, orientation, windows and landscaping. In the event of shadow flicker, the details and duration of occurrence will be recorded.
- Screening measures will then be discussed with the affected homeowner including installation of appropriate window blinds, planting of screening vegetation, or other on-site specific measures. If agreement can be reached, then mitigation would be implemented as soon as practically possible with full costs borne by the developer.
- If it is not possible to mitigate any identified shadow flicker limit using such measures, then turbine control measures will be implemented.

18.34. I am not satisfied that this approach to mitigation is reasonable, practical, enforceable or in accordance with the guidance set out in dWEDG, 2019 which recommends the SCADA control system which eliminates shadow flicker using technology. I am of the view that the applicant's commitment to operate the windfarm in accordance with dWEDG, 2019 which advocates zero shadow flicker at any affected property can only be achieved through operation of turbine control measures, and therefore if the Board is minded to grant permission that this matter be conditioned accordingly.

Noise

18.35. This matter is addressed in the subsequent 'noise and vibration' section of this report. For the reasons stated I am satisfied that the background noise survey carried out, is consistent with good practice and is indicative of the quiet rural

environment in which the development is situated, as influenced by bird song and local road traffic. The proposed noise limits are in accordance with WEDG 2006. Whilst it is generally accepted that there are incidences of wind energy giving rise to adverse effects on residential amenity, by way of noise, these cases are few and site specific. In this instance, the applicant has demonstrated that the proposed wind farm can operate within the noise limits set out in WEDG 2006. If permission is granted, the applicant will be subject to these noise limits. Any exceedances would be in breach of the permission granted, and subject to enforcement action.

Residential Amenity

- 18.36. The proposed development is situated such that turbines are set back by >720m from sensitive receptors, with the nearest property at 720m from T03. This is in compliance with the recommended 4x tip height ($4 \times 180 = 720\text{m}$) for visual amenity purposes, set out in dWEDG 2019. In my assessment of landscape and visual effects I have concluded that significant local landscape and visual effects will arise and accept that the turbines will be visible and prominent when viewed from local residential properties within the immediate area of the site and particularly within the village of Kilbane but consider that turbines will not be overbearing on any individual dwelling. I agree that significant visual impacts will occur from a small number of local residential receptors in Kilbane, as represented by **VP14: (Kilbane)** but that these are not such that would warrant refusing permission or that would materially injure residential amenity.
- 18.37. During construction and to a lesser extent, decommissioning, there are likely to be adverse effects from construction dust, noise and an increase in traffic on the local roads. However, having regard to my separate conclusions in respect of construction noise and vibration, air quality and traffic, it is considered that these will be short term and can be managed to minimise effects to acceptable levels via mitigation measures and in particular the TMP and CEMP. This is with the exception of a minor significant effect at BNAL06

for BESS operational noise where the rating level exceeds the background sound level by a maximum of +3dB during the nighttime.

18.38. Lighting is required to satisfy IAA requirements. Regarding the comments that this would result in a form of light pollution, I consider that it will be modest with an upward orientation on a limited number of turbines and will have no significant impacts on residential or rural amenity.

18.39. Having regard to the foregoing, and to my conclusions in respect of shadow flicker and operational noise, I am satisfied that the subject development is not likely to give rise to significant adverse effects on residential amenity by reason of turbine or construction noise with the exception of BESS operational noise on a single receptor at BNAL06.

Property Values

18.40. The applicant refers to a number of studies on the impact of wind farms on property values, including the US Department of Energy (2009), Renewable UK (2014), Climate Exchange Scotland (2016) and an Irish working paper published by Ceris in 2023. I have examined the Irish and Scottish Reports. The Irish report is a 2023 University of Galway working paper on '*Wind Turbines and House Prices along the West of Ireland*' – Centre for Economic Research on Inclusivity and Sustainability (CERIS). The general conclusion is that turbines can incur a discount on nearby properties but that there is evidence to suggest that price effect is not persistent and can be minimised through siting decisions.

18.41. It is considered that the available research points to inconsistent evidence of short-term effects only on property prices (if at all), with potential impacts limited to distances within 1km of a turbine, and persuasive evidence of recovery over time. To the contrary there is also evidence of potential positive effects associated with amenity benefits and community gain proposals. In the circumstances of this case the proposed windfarm is in a rural location with a low population density, with the nearest residential receptor 720m away from the proposed turbine layout and only 28no. habitable dwellings within 1km of any turbine. Furthermore, I refer to my assessment of noise and shadow

flicker where it is concluded that no adverse effects are predicted on residential receptors and taking all of these factors into account I am satisfied that there is little potential for significant adverse effects on property values in the area of the site.

Impacts on National Schools

18.42. In relation to national schools, the nearest are Bridgetown NS approx. 4km to the south at its closest point (T07) with Broadford & Kilbane NS located approx. 4.9km southwest at its closest point (T07). Secondary schools and third level institutes are noted at a greater remove. At this distance, neither NS would be affected by noise or shadow flicker effects. Furthermore, both schools are situated within settlements and are separated by intervening topography, vegetation and built form in addition to distance such that no impacts on their environment or amenity are likely to arise.

Health

18.43. The applicant refers to the DHPCLG '*Key issues consultation paper on the transposition of the EIA Directive, 2017*' and the EPAs EIAR Guidelines (2022) to support its position that the consideration of the effects on population and human health should be carried out under the relevant environmental categories addressed elsewhere in the EIAR. The applicant states that a windfarm is not a recognised source of pollution and is not considered to have ongoing emissions to environmental media with the subsequent potential for human health effects. The applicant refers to Chapters 8, 9, 10, 11, 12 and 15 of the EIAR which provide an assessment of land, soils, geology, water, air quality, climate, noise and vibration and roads and traffic and the overall conclusions that residual effects are not significant and will not lead to significant effects on any environmental media with the potential to lead to health effects for humans. At operational stage, the applicant states that the project will have a long-term moderate positive effect on air quality which will contribute to a long term slight positive effect on human health.

18.44. I am aware of the body of national, European and international literature which typically concludes that there is no evidence of health-related effects arising

from exposure to wind turbines. I note the publications referenced by the applicant and the position that there is currently no published credible evidence to positively link wind turbines with adverse health effects and that anecdotal reports to the contrary are not supported by peer reviewed research. Having regard to the conclusions reached in relation to noise and vibration (in the next chapter of my report), to the siting of the proposed turbines 720m and greater from any dwelling and the operation of the turbines in accordance with strict noise limits with the absence of shadow flicker, I am satisfied that the proposed development will not give rise to any significant adverse effects on public health. However, for those that are concerned regarding effects or who oppose the development, I accept that psychological stress and/or annoyance may arise.

Population, Business and Tourism

18.45. Having regard to the conclusions I have reached above in relation to property values, schools and health I do not consider that the development will have a significant impact on the area or its attractiveness as a place of residence or that there will be consequential effects on population profile. I note the evidence presented by the applicant in relation to the employment potential and potential economic dividends at construction and operational stages of the proposed windfarm (IWEA (2009 & 2014), SEAI (2019), WindEurope (2017 & 2022) and the short-term moderate and long-term slight positive effects predicted. The proposed development as a major infrastructure and renewable energy project will bring short term, positive effects on the local population by way of direct and indirect effects on employment and increased expenditure locally in goods and services. I am satisfied that no significant negative or adverse local economic effects will arise.

18.46. The available research indicates that wind farms are not having an adverse impact on tourism or tourist attitudes, and I am further satisfied that the proposed development will not negatively impact tourism as it is removed from significant tourism infrastructure and will not injure the visual amenities of the area as discussed in other sections of this report. The EIAR concludes that

there is likely to be positive impacts on business from increased household income and demand for goods and services. The EIAR concludes that the proposed development will have no negative impact on population trends, age or structure and I am satisfied that there is no evidence to suggest otherwise, rather the conclusions on tourism and business impacts support this position.

Safety Concerns

18.47. Having regard to the position of the 2006 Guidelines that wind turbines do not pose a public safety risk and to the design information mitigating risk of 'ice throw' and 'increased lightning' strike, I am satisfied that no public safety issues arise from the proposed development. In this regard I note the conclusions of Chapter 16 in relation to major accidents and natural disasters that the subject development does not give rise to the risk of significant environmental effects because of its vulnerability to major accidents or natural disasters. The development site is considered stable with little potential for landslide or floodrisk (see water & land, soils & geology section of this report). The risk of fire and electrical faults is considered to be low and managed by on site arrangements to comply with health & safety through the fire safety risk assessment and CEMP.

18.48. Conclusion: Direct and Indirect Effects (*Population and Human Health*).

18.49. Having regard to my examination of environmental information in respect of Population and Human Health it is considered that the main significant direct and indirect effects after the application of proposed mitigation measures are:

- Long-term significant positive impact on Renewable Energy Production and Reduction in Greenhouse Gas Emissions.
- A minor significant effect at BNAL06 for BESS operational noise where the rating level exceeds the background sound level by a maximum of +3dB during the nighttime.

18.50. Noise and Vibration

18.51. Issues Raised

Issues raised in the appeal are in respect of the adequacy of the noise section of the EIAR and impacts on human health (low frequency noise, infrasound and AM), construction noise and the applicability of relevant assessment guidance including WHO guidance.

18.52.Examination of the EIAR

Context

18.53. Chapter 12 deals with noise and vibration. The noise assessment is undertaken in accordance with guidance set out by the Environmental Protection Agency (“EPA”), National and International policy and guidance, and in accordance with the noise guidance and assessment methodologies set out in Section 12.2 of Chapter 12. Construction noise and vibration assessment was undertaken using the BS 5228: 2009+A1:2014²² guidance. Operational noise assessment (including cumulative noise assessment) was undertaken in accordance with the WEDG 2006 and ETSU-R-97²³, supplemented by the IOA GPG²⁴. The BESS Operational Noise Assessment considered a qualitative assessment in accordance with BS 4142:2014+A1:2019²⁵ and a quantitative assessment in accordance with BS 8233:2014²⁶. Associated Appendices include:

- Appendix 12-1 Construction Noise Report
- Appendix 12-2(a)&(b) Operational Noise Report
- Appendix 12-3 BESS Operational Noise Report
- Fig. 12-1 Construction Noise Assessment Locations
- Fig. 12-2 Wind Turbines Operational Noise Assessment Locations
- Fig. 12-3 Cumulative Wind Farm Locations; and

²² British Standard ‘Code of Practice for noise and vibration control on construction and open developments’

²³ ‘The Assessment and Rating of Noise from Wind Farms’

²⁴ 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)

²⁵ British Standard ‘Methods for rating and assessing industrial and commercial sound’

²⁶ British Standard ‘Guidance on sound insulation and noise reduction for buildings’

- Fig. 12-4 BESS Operational Noise Assessment Locations

18.54. In relation to Amplitude Modulation (AM) and 'other Amplitude Modulation' (OAM) specifically, the applicant proposes to appoint a community liaison officer as a first point of contact and that a mitigation strategy (set out in Section 12.7.2) will be employed.

18.55. Effects associated with decommissioning are scoped out on the basis that they are unlikely to produce higher noise levels than those produced during construction and if construction noise levels are predicted to be below threshold levels, then decommissioning noise will also be within the threshold levels. A total of 160 Noise Sensitive Receptors (NSRs) were identified within a 3km search area, these are nearly all residential properties, a few are derelict (and have been scoped out) and some reflect planning application locations. Seven Noise Monitoring Locations (NMLs) were selected to the east, west, southeast and southwest of the proposed wind farm site to represent background noise levels at all NSRs as shown in Fig. 12-2. Construction works related to the proposed GCR will occur outwith the wind farm site and have been assessed qualitatively. Background noise monitoring was undertaken over the period of 4th April 2023 to 21st June 2023 at the seven NMLs (shown on Fig. 12-2), sited within or in proximity to amenity areas of residential dwellings and with regard to local noise sources (boiler flues, watercourses etc). The significance criteria adopted for the assessment of construction noise are based on Appendix E part E.3.2 of BS 5228-1:2009+A1:2014 as follows: Daytime: 'not significant' $\leq 65\text{dB LAeq,T}$, 'potentially significant' $\geq 65\text{dB LAeq,T}$; Evenings and Weekends: 'not significant' $\leq 55\text{dB LAeq,T}$, 'potentially significant' $\geq 55\text{dB LAeq,T}$; and Nighttime: 'not significant' $\leq 45\text{dB LAeq,T}$, 'potentially significant' $\geq 45\text{dB LAeq,T}$, and where exceedance does not indicate a significant effect, but a potential significant effect. The criteria for assessing the significance of operational noise from wind turbines refers to compliance or non-compliance with the total WEDG 2006 noise limits, which are:

- 40 dB(A) for daytime where background noise levels are below 30 dB(A); and
- 45dB(A) (for daytime) or background noise plus 5dB, whichever is the greater, where background noise levels are greater than 30dB(A),
- 43dB(A) at nighttime or background plus 5Db(A), whichever is the greater.

Where predicted wind turbine noise meets or is less than the noise limits defined in WEDG 2006 then the effects are deemed not significant, with any breach having the potential to result in adverse impacts. For BESS Operational Noise BS4142 is used, but this does not define significance criteria, but rather a method to determine the likelihood of adverse impact based on the rating level, the background sound level and the context within which the sound occurs. Typically, the greater the difference, the greater the magnitude of impact, with +10dB or more likely to be an indication of significant adverse impact and +5dB an adverse impact, depending on context.

18.56. Limitations are considered in Section 12.4.7.4 of Chapter 12 for noise. I note that for assessment locations where no background noise measurements were undertaken, noise data collected at proxy locations deemed representative of the background noise environment was used to assess noise impacts at the nearest sensitive receptors. Construction noise is based on an indicative construction programme and typical activities expected. I note that three candidate wind turbine models have been used for predictions of operational noise and that modelling was then run for the Maximum and Minimum scenarios as described in Table 1.3 of EIAR Chapter 1. I note that representative plant were modelled for the BESS noise predictions. A statement of authority is provided.

Baseline

18.57. The proposed wind farm is located within a rural location where existing background noise levels at the NSRs are generally considered to be low ≤

30db. The predominant sound sources in the area are wind noise and birdsong, with cars on local roads also audible on occasions. Table 12.9 and 12.10 provide a summary of the background noise levels measured during quiet daytime and night-time periods, with periods of rainfall excluded from the dataset. Of the 160 Noise Sensitive Receptors (NSRs) identified, a total of 9 no. were chosen as construction noise assessment locations (CNALs), 19 no. noise assessment locations (NALs) were selected for detailed assessment (all of which are residential properties), and a total of 7 no. were chosen as BESS noise assessment locations (BNALs). Fig. 12-1 to 12-4 (inclusive) refer).

Potential Effects

18.58. Potential noise and vibration effects of the development are set out in the EIAR and summarised in Table NV1 below:

Table NV1: Summary of Potential Effects (Noise and Vibration)

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do nothing	Not assessed.
Construction Phase Noise	<i>Windfarm</i> - Predicted windfarm construction noise levels in core hours for all scenarios do not exceed the daytime 65dB(A) threshold at all CNALs. - At CNAL04, during the construction/upgrade of the L7080 (scenario 01), predicted noise immission levels are equal to the daytime threshold (65dB(A)). This calculation is based on an assumption that noise energy of mobile plant is averaged out along a linear movement path. For some period, plant will be located directly outside a property and on these occasions noise immission levels will be higher for a short time, likewise they will be less than predicted as plant and activities operate elsewhere. - At CNAL04 & 05 noise levels will be above the evening and weekend 55dBA threshold levels. Whilst this is unlikely to result in a significant impact as duration of exposure will be limited, it is recommended that construction activities are not undertaken in proximity to these properties outwith normal daytime working hours (Mon-Fri 07:00-19:00 and Saturday 07:00-13:00). - No construction activities are proposed during nighttime, however a night-time scenario (06) is included in case of generator usage at night for welfare facilities and lighting only. The predicted noise levels are comfortably below the 45dBA threshold level. No significant noise effects predicted for wind farm construction.

	<i>Proposed Grid Connection Route</i> - Plant required will be relatively small, typically based around an excavator for trenching and backfill activities, with activity in any one location limited in duration. Adverse noise effects are anticipated to be negligible. - Where construction activities occur beside a dwelling the noise levels at that location are likely to be in the region of 75-80dB(A) and to exceed the BS 5228 threshold for a short period of time. This will only occur if within 20m of a dwelling and for a short period of time as the construction activities are anticipated to move at 150m to 300m a day. The impact is deemed not significant. - At some watercourses, culverts and drain crossings there may be a requirement for Horizontal Directional Drilling (HDD) with HDD required for a small watercourse crossing at ITM reference (562395, 671840) approx. 30m from the centre point of dwelling CNAL09 (NSR17) and adjacent to the amenity area. The proposed plant for this crossing is a Vermeer D36 x 50 Directional Drill (DD) which is smaller and requires less plant. A lower noise output is therefore expected with work likely to be completed within 1 to 2 weeks; therefore this is considered a short-term activity. Calculations for the Vermeer DD rig assume a source noise level of 94dBA at 1m indicating that noise levels would be below the 65 dBA threshold at 30m. At CNAL09 noise mitigation measures are recommended in accordance with BS 5228 including temporary hoarding or use of 'acoustic blankets' and that construction activities are not undertaken outwith normal daytime working hours. No significant noise effects predicted for construction activities associated with cable trenching, bridge crossings and road junction upgrades.
Construction Phase Vibration	<i>Windfarm</i> - Due to separation distances no significant effects are anticipated. <i>Proposed Grid Connection Route</i> - Where construction activities are closest to residential receptors some local vibration effects may be present, however they are expected to be low and of limited duration. The impact is deemed not significant for construction vibration.
Operational Phase Noise	<i>Windfarm</i> - Predicted wind turbine noise levels from the proposed wind farm on its own meet the site-specific noise limits at all NALs' except NAL11 for both daytime and night-time periods, as such there would be no significant effects at those receptors. - At NAL11 a small exceedance of the site-specific noise limit was predicted during the nighttime from 7ms⁻¹ onwards (1.2 dB). There would be a potential significant effect at NAL11. - Not possible to predict if OAM will occur at the NALs surrounding the project and if it does, how frequent and sustained it might be. Potential adverse impact in the absence of mitigation. <i>BESS</i>

	- For all NALs, except BNAL06, the rating level remains below the background sound level during the night-time indicating the specific sound source having a low impact depending on context. - For BNAL06 the rating level exceeds the background sound level by a maximum of +3dBA during the nighttime, which is below the level that BS4142 states as an 'indication of an adverse impact pending on context'. Relevant context includes: the noise model assumes all cooling plant is operating at maximum noise level output, but this will only occur when ambient temperatures are high, or the equipment is under full load. For much of the time sound output will be reduced; noise model assumes all plant operating concurrently, but not all cooling or heating units will necessarily be required to operate at the same time; and the rating levels at all NALs are classified as 'low' and 'very low' at night (≤ 30 dB LA90(10mins)) and in this situation the BS 4142 states that absolute levels might be as or more relevant than the exceedance level (especially at night) and in this case absolute levels remain well below the fixed guideline values detailed in BS8233 for all receptors and time periods. No significant effects predicted at all BNALs, except for BNAL06 where a minor significant effect is predicted during nighttime.
Cumulative	<i>Construction Phase</i> - The construction noise assessment shows that the proposed project on its own meets the BS 5228 threshold during core hours of work, with sufficient margin at nearby receptors for other construction work to occur simultaneously. The only exception is at CNAL04 during construction/upgrade of L7080. However, work will be in temporary phases and very unlikely to occur at the same time and location as any other project near receptors. No cumulative noise effects are anticipated. <i>Operational Phase</i> - The result of the likely cumulative noise assessment show that the proposed windfarm can operate concurrently with the other operational and permitted windfarms in the area whilst meeting WEDG 2006 noise limits at all NALs and as such there would be no significant effects at those receptors. (<i>n.b Vestas V150 6.0 MW with Serrated Blades on a 105m hub was used as the precautionary scenario candidate</i>). No significant cumulative BESS operational noise is anticipated.

Mitigation

18.59. Whilst no significant effects are predicted from construction noise or vibration, good practice during construction is proposed as detailed in the CEMP (Appendix 4-3) including core working hours, defined arrangements for abnormal loads and health & safety requirements and simple control measures in relation to communication and operation of plant and machinery,

including the measures to control noise associated with HDD in proximity to CNAL09.

18.60. At operational stage the final choice of turbine will comply with the noise limits determined in the assessment. The noise modelling presented in the EIAR is based on a Vestas V150 6.0 MW turbine, which represents a precautionary scenario and the highest predicted noise levels and requires the use of mode management to meet the determined noise levels at NAL11. This is also required for one of the other two candidate turbines (Nordex N149 5.7 MW), but not for the Siemens-Gamesa SG 6.0-155 and depending on the final turbine selected, mitigation by way of mode management may or may not be required. The EIAR states that it is not possible to predict OAM and therefore mitigation measures are set out in the event that complaints are received including reporting, screening and operational mitigations. No specific mitigation measures are proposed for the BESS.

Residual Effects

18.61. With the implementation of mitigation measures, including mode management (if required) at NAL11 the EIAR concludes that there will be no significant residual effects from construction, vibration, operational or cumulative effects. The EIAR does conclude that there will be a **minor significant** effect at BNAL06 during the nighttime as result of predicted BESS noise levels.

18.62. Analysis, Evaluation and Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 12 of the EIAR, the associated documents and submissions on file in respect of noise and vibration. I am satisfied that the applicant's understanding of the baseline environment is comprehensive and that the key impacts in respect of likely noise effects, including cumulative effects, have been identified. Parties to the appeal raise several issues in respect of noise which I address below.

18.63. Adequacy of assessment

18.64. The PA was generally not satisfied that construction and operational noise, and vibration impacts on residential amenity were adequately assessed in the

EIAR. This was based on a general view that the assessment was undertaken in accordance with WEDG 2006, and that this guidance is now out of date. Specifically, the PA was concerned that whilst noise levels appeared to stay within the WEDG 2006 guidelines, an increase in noise level of 10dB above existing noise levels would still have a significant effect at an NSR as is the case in relation to daytime construction noise at CNAL4. The PA also opined that noise impacts associated with excavation of the borrow pit and rock breaking were not considered, that traffic movements associated with concrete pours was intense, and that there is inadequate detail as to how construction phase noise and vibration levels were estimated. Concerns were also expressed in relation to the enforceability of OAM mitigation and in relation to the source of aggregate materials and the potential volume of construction traffic using the R466 through Kilbane Village if this was off site. The statutory report from NEHS (HSE) opines that the most appropriate criteria for assessing the significance of predicted noise would be the World Health Organisation (WHO) 'Environmental Noise Guidelines for the European Region, 2018' and that existing noise data should be assessed against these guidelines.

- 18.65. In response the applicant's position is that WEDG 2006 are the current guidelines setting noise limits for wind energy developments as supplemented by ETSU-R-97 and IOA GPG and the development has been designed and assessed in accordance with same. The applicant notes that this position is consistent with recent Board decisions including: ABP-317227-23 (Fahy Beg), 316025-23 and 318704-23. In response to the statutory report from NEHS the applicant states that it is not appropriate to use BS 4142 to determine the significance of impacts from wind noise, referencing a number of problems with its interpretation and application set out in ETSU-R-97 and a reference within BS 4142 itself which confirms that it is not intended to be applied to the rating and assessment of sound from other sources falling within the scope of other standards and guidance. The applicant's position is that in this case the assessment comes within the scope and guidance of ETSU-R-97 as supplemented.

18.66. In relation to the PA and NEHS position that the 2018 WHO Guidelines should be used for the assessment of noise impacts, the applicant responds that the WHO guidelines make a 'conditional' recommendation only for wind turbines which acknowledges that it *'requires a policy making process with substantial debate and involvement of various stakeholders..... (with).....less certainty of its efficacy owing to lower quality of evidence of a net benefit, opposing values and preferences of individuals and populations affected or the high resource implications of the recommendation, meaning there may be circumstances or settings in which it will not apply.'* In addition, the applicant opines that the recommendations for wind turbine noise in the WHO Guidelines are expressed as Lden and Lnight which are different to the WEDG 2006. The WHO Guidelines do not make a recommendation in relation to Lnight. The Lden is not currently used in Ireland for the prediction, measurement or assessment of wind turbine noise and this is reflected in the WEDG 2006 as it is considered that the metric may be a poor characterisation of wind turbine noise and may limit the ability to observe associations between turbine noise and health outcomes. No changes have been made to the WEDG 2006, ETSU-R-97 or IOA GPG in response to the WHO Guidelines and the applicant considered that an assessment of operational wind turbine noise against the 2018 WHO Guidelines was not appropriate or necessary. I am satisfied that the WEDG 2006 remains the current guidance against which noise impacts and effects should be assessed.

Operational Phase Noise

18.67. I am satisfied that the nearest noise sensitive receptors have been identified, background noise monitoring consistent with best practice guidelines (including the Institute of Acoustics Good Practice Guide to the application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise) has been carried out using the background survey data as a proxy for NSR's where monitoring was not carried out. I am also satisfied that a conservative approach has been taken, for instance, using a Vestas V150 6.0 MW turbine model to consider the worst case (noisiest) scenario, noise propagation

parameters and directivity attenuation factors in accordance with IOA GPG guidance. I am satisfied that the applicant has followed industry best practice guidelines for the assessment of background noise, with 'Method A' of Section 2.6.3 of the IOA GPG used to record wind speed data at the two heights closest to hub height (100m and 110m to calculate hub height wind speed (105m), which was then standardised to 10m in height.

A summary of prevailing background noise levels during quiet daytime periods is set out in Table 5.2. of Appendix 12-2 and ranges from 29.4dB(A) (at NML2) for low wind speeds to 45.8dB(A) (at NML1) for higher wind speeds. A summary of prevailing background noise levels during nighttime periods is set out in Table 5.3. of Appendix 12-2 and ranges from 24.1dB(A) (at NML2) for low wind speeds to 41.1dB(A) (at NML2) for higher wind speeds. The Total WEDG 2006 noise limits established for each NAL are then set out in Table 6.2 (Daytime) and Table 6.3 (Nighttime) based on a daytime limit of 40 dB(A) where background noise levels are below 30db, and 45db or background noise + 5dB (whichever is greater) where background levels are above 30db, and a nighttime limit of 43dB(A) or background noise +5dB, whichever is greater. The permitted Carrownagowan and Fahy Beg windfarms in proximity to the proposed development were noted and a cumulative assessment was undertaken at all NALs with the results set out in the compliance tables for cumulative noise (Table 6.4. (daytime) and Table 6.5 (nighttime)). The results show that the predicted cumulative wind farm noise immission levels would meet the Total WEDG 2006 noise limits at all NALs during daytime and nighttime periods. Site specific noise limits have also been derived for the proposed windfarm at all NALs with consideration given to the noise limit already allocated to, or which could be theoretically used, by the other permitted windfarms with the results set out in compliance tables for site specific noise (Table 6.7 (Daytime) and 6.8 (nighttime)). The results show that the wind farm can operate within the site-specific noise limits at all receptors with the exception of NAL11 where the limit was exceeded in full turbine mode from wind speed of 7ms⁻¹ onwards, with a maximum exceedance of 1.2dB. With the use of low noise modes, this exceedance is mitigated, and the

assessment concludes that the use of site-specific noise limits will ensure that the proposed wind farm can operate concurrently with other operational wind farms developments in the area in a measurable and enforceable manner in accordance with WEDG 2006.

18.68. I note the aged nature of the WEDG 2006, however the more stringent controls in the Government's 2019 draft guidelines have not been adopted and therefore WEDG 2006 remains the statutory document for the assessment of wind turbine noise. Whilst the proposed development will change the noise environment of the wind farm site for noise sensitive properties closest to the wind farm and notably NAL11, the predicted noise levels are below WEDG 2006 guideline levels. Noise levels from the windfarm at all NSRs is predicted to be within the derived noise limits (site specific), and typically well within predicted limits.

Construction Noise & Vibration

18.69. In response to the PA's concerns in relation to construction noise and use of BS 5228 the applicants response states that there is no published statutory Irish Guidance containing noise limits for construction activities other than NRA documents relating to road developments only, and that the Association of Acoustic Consultants Ireland have published guidance²⁷ which states that the chief guidance document applied in the assessment of construction phase impacts is British Standard BS 5228:2009+A1:2014.

18.70. I note that the modelling carried out considered the noisiest activities likely to occur during construction and assumes that they are occurring at locations closest to the NSR's and represent a worst-case scenario assuming all plant is operating simultaneously, concurrently and at full power. Notwithstanding, all predicted levels for construction of the wind farm are below the Category A daytime, evening and weekend thresholds (detailed within BS 5228:2009) for all receptors except CNAL04 and 05 where noise levels will be above the evening and weekend threshold of 55dBA. Notwithstanding, significant effects

²⁷ 'Environmental Noise Guidance for Local Authority Planning & Enforcement Departments'

are not predicted as exposure will be short, levels will be lower when intermittency of operation is considered, and construction activities will not take place outside of normal daytime working hours (Mon-Fri 07:00 – 19:00 and Saturday 07:00-13:00). I also note that for the construction of the proposed GCR the transient nature of works means that any exceedance of noise level limits that may occur will be short term and only when plant is located directly outside a dwelling and within a distance of 20m, with activities estimated to move at 150 to 300m a day. In addition, I note that HDD is required for a small watercourse crossing approx. 30m from CNAL09, but that work will be completed in 1 to 2 weeks and the modelled noise levels indicated that limits will not be exceeded at 30m. Notwithstanding I note that noise mitigation measures are recommended at this location in accordance with BS 5228 including temporary hoarding or use of 'acoustic blankets' and that construction activities are not undertaken outwith normal daytime working hours. Accordingly, no significant construction noise effects are predicted. I would acknowledge that during construction, there are likely to be adverse effects from construction noise and an increase in traffic on the local roads particularly from the perspective of some local residents. However, I am satisfied that where these occur, they will be short term and can be managed to minimise effects to acceptable levels via the good construction practice and mitigation proposed including in the TMP and CEMP.

18.71. Otherwise, I am satisfied that the construction noise modelling did consider excavation of the borrow pit and rock breaking (Table 5.1 of Appendix 12-1 and Annex 2 refers) and this was included in the noise assessment.

18.72. In relation to vibration the applicant states that no significant effects are anticipated due to separation distances, and that whilst some local vibration effects may be present when proposed GCR works are closest to residential receptors, they will be low and of limited duration. The applicant states that as vibration from typical construction activity is generally only noticeable within a few metres of a property, a detailed assessment was deemed unnecessary.

Otherwise, the applicant proposes to comply with BS5228 guidance in relation to vibration level limits. I am satisfied that this position is reasonable.

BESS Noise

18.73. With the exception of BNAL06, the rating level for operational BESS noise remains below background sound level during the nighttime, indicating that this specific sound source will have a low impact. For BNAL06 an exceedance of the background sound level by a maximum of +3bd during the nighttime is predicted (*I note the location of BNAL06 relative to the BESS on Fig. 12-4*). It is acknowledged that this is below the level at which BS4142 indicates an 'adverse' (as opposed to significant) impact. I also acknowledge that the context of this assessment assumes certain noise generation conditions, which are unlikely to occur at the same time, or which will occur infrequently. Finally, I also acknowledge that the background sound level at night is classed as very low and that therefore in accordance with BS4142 the modest exceedance level in this case may not be as relevant as this baseline factor. Having regard to the aforesaid, I accept the applicant's position that this exceedance is not anticipated to result in an adverse impact and the assessment that it will result in a minor significant effect at BNAL06. No mitigation is proposed.

OAM

18.74. In relation to OAM the applicant refers to a recent judgement in *Nagle View Turbine Aware Group v An Bord Pleanala* (IEHC 603 (2024)) in which Mr. Justice Humphreys endorses the Boards treatment of OAM and its decision not to impose a condition addressing OAM given there is currently no method available to predict OAM and no objective basis for the imposition of a condition. The applicant states however, that should OAM occur, it can be mitigated, but that mitigation measures are always site-specific and cannot be pre-empted. The applicant sets out detailed measures in Section 12.7.2 of the EIAR for an expedited response to OAM should it occur through a Community Liaison Officer, and I am satisfied that this position is both reasonable and

appropriate having regard to the basis of recent legal judgement on the matter.

Noise nuisance

18.75. Third parties refer to a recent High Court Case ruling by Ms Justice Emily Egan which determined that noise associated with two wind turbines at Kilcomb near Enniscorthy, Co. Wexford amounted to a nuisance. In this instance, the applicant has demonstrated clear compliance with current operational noise limits. I am satisfied therefore that subject to compliance with these noise limits, significant adverse impacts on sensitive receptors will not arise.

18.76. Conclusion: Direct and Indirect Effects *(Noise & Vibration)*

18.77. Having regard to my assessment of the proposed development on noise and vibration, it is considered that:

- Having regard to predicted levels of construction noise and vibration, standard construction noise limits, the distance of the development from sensitive receptors and/or the short-term nature of works (e.g. L7080 upgrade works), I am satisfied that no significant adverse effects will arise during construction from noise or vibration, including at CNAL09.
- Whilst the noise environment for the area of the windfarm site will change at operational stage, subject to the operation of the proposed development within the noise limits set out in the application documents, no significant adverse effects by way of operational windfarm noise will arise at noise sensitive receptors, including at NAL11.

AND

That the main **significant direct and indirect effect** after the application of mitigation measures is:

- A **minor significant effect at BNAL06** during the nighttime as result of predicted BESS noise levels. This effect will be mitigated by the fact that the exceedance remains below the BS 4142 threshold indicating a potential 'adverse' effect and by the actual (lesser) operating noise conditions as opposed to the worst-case scenario in the noise modelling carried out.

18.78. Biodiversity

18.79. Issues Raised

18.80. Issues raised in the course of the appeal by third parties concern: construction works in proximity to Slieve Bernagh SAC, inadequacy of Bat Surveys (including failure to follow NPWS guidance and minimum survey periods in each season, loss of data in initial spring deployment, little variation in weather, and survey material (2022) out of date), replacement of lost hedgerow and treelines with fast growing species of non-local provenance (such as willow), absence of a Marsh Fritillary Report, and impacts on the Glenmora Wood SAC as a result of the GCR. The IFI raised concerns in relation to the protection of the inland fisheries resource including water quality, aquatic habitats and their associated riparian corridors. The NPWS did not make nature conservation comments. The decision of the PA raised issues in relation to impacts on Birds and Bats, including cumulative impacts, and hydrological concerns impacting water quality in downstream European Sites. Specifically in its EIA the PA was not satisfied that the impacts on Bats was adequately assessed.

18.81. The impacts on Birds are considered separately in the birds section of this report, and the impacts on European sites are primarily addressed in the Appropriate Assessment section of this report and the impacts on Hydrology are primarily assessed in the water section of this report.

18.82. Examination of the EIAR

Context

18.83. Chapter 6 of the EIAR deals with Biodiversity (with the exception of Birds which is addressed in Chapter 7). Associated Figures and Appendices are:

- Appendix 4-2 Peat and Spoil Management Plan
- Appendix 4-3 CEMP
- Appendix 4-4 Surface Water Management Plan
- Appendix 6-1 Botanical Survey Report
- Appendix 6-2 Bat Report
- Appendix 6-3 Aquatic Baseline
- Appendix 6-4 BEMP
- Appendix 7-1 Species List
- Appendix 7-2 Survey Effort
- Appendix 7-3 Summary Data (of survey records)
- Appendix 7-4 (a-f) inc. Survey Data
- Appendix 7.5 (a -d) inc. Confidential Survey Data
- Appendix 8-1 Geotechnical and Peat Stability Report
- Appendix 9-1 Flood Risk Assessment
- Appendix 9-2 Lab Reports
- Appendix 9-3 Water Framework Directive.

18.84. The assessment is undertaken having regard to the requirements for the protection of habitats, species and biodiversity as set out in European legislation and National legislation and policy. In addition, legislation which applies to the protection of habitats, fauna, invasive species and water quality in Ireland is also considered. A statement of authority is included.

18.85. Assessment methodology includes desk study, identification of designated sites, NPWS Article 17 Reporting, Scoping and Consultation (Table 6-1) and field surveys (Table 6-2) including multi-disciplinary walkover surveys, dedicated habitat and vegetation composition surveys and terrestrial fauna surveys. Dedicated surveys include:

- Badger Survey – conducted according to best practice with specialist targeted surveys in areas identified as potential badger habitat. Where

setts were identified as being potentially active, camera traps were set up to confirm activity. The survey was not constrained.

- Otter Survey – conducted according to best practice guidance with specialist targeted surveys at all watercourses within the site and GCR. This involved a search for, and mapping of, signs within 150m of survey site.
- Marsh Fritillary - as the desk study showed records in hectad R67, a targeted larval web survey for the species was undertaken during the optimal period (August – September) following best practice guidance. This included potential suitable marsh fritillary habitat.
- Bat Surveys – described in the Bat Report, Appendix 6-2 of the EIAR. Survey design and effort was carried out in accordance with 'Bat Surveys: Good Practice Guidelines' prepared by the Bat Conservation Trust (Collins, 2016). A new edition was published (Collins 2023) after the site surveys were undertaken and regard was had to same in the assessment. The surveys were considered appropriate for the site.
- Aquatic surveys – Undertaken on a catchment wide basis surveys focussed on the detection of freshwater habitats and species of high conservation value including White-clawed crayfish (*Austropotamobius pallipes*), Freshwater Pearl Mussel (*Margaritifera margaritifera*)(eDNA survey), Macro-invertebrates (biological water quality), Otter (*Lutra lutra*) and fish species including supporting nursery and spawning habitat. The surveys also documented macrophyte and aquatic bryophyte communities including Annex I habitat associations. Full detail is provided in the Aquatic Report Appendix 6-3 of the EIAR.

18.86. Limitations are considered in Section 6.2.5. I note that no significant limitations in the scope, scale or context of the assessment were identified.

Baseline

18.87. The baseline environment is described in section 6.3 of the EIAR. The findings of the desk study are first described beginning with designated sites. A map of

all European sites within the vicinity of the project is provided in Fig. 6-1 and these are fully described and assessed in the NIS and considered in the AA section of this report. All nationally designated sites are shown in Fig. 6-2 and listed in Table 6-4. National sites deemed to be within the ZOI of the proposed development and requiring further assessment are:

- Doon Lough NHA (000337) – This site and the proposed project lie within the same hydrogeological catchment and the study area drains into the Broadford River which flows directly into Doon Lough 5km to the west. The QI listed for this NHA is potentially sensitive to surface water and ground water disturbance.
- Glenmora Wood (001013) – the GCR route bisects this site via the local road L3046 with potential for direct effects.
- Castle Lake (000239) – Taking a precautionary approach there is potential for indirect effects via a direct surface water pathway. This pNHA is sensitive to surface water and groundwater disturbance.
- Fergus Estuary and Inner Shannon, North Shore (002048) - Taking a precautionary approach there is potential for indirect effects via a direct surface water pathway. The windfarm site and GCR are hydrologically linked to this site. The habitats and species associated with this pNHA are potentially sensitive to surface water and ground water disturbance.

18.88.NPWS Article 17 datasets (2019) were examined to identify Article 17 habitats within or adjacent to the EIAR site boundary (Fig 6-3 refers) with the following results:

- Dry Heath (4030) is mapped within the south-eastern area of the EIAR site boundary and in two separate areas beyond the southeastern boundary (23ha).
- Wet Heath (4010) is mapped in the south-east corner of the EIAR site boundary. The same area is mapped as Blanket Bog (7130) and is described as small at 40.4ha.
- An area of Alpine and subalpine health (4060) is mapped within the northeast of the EIAR site boundary measuring 6.8ha. Two further areas are mapped approx. 50m and 300m to the south-east of the EIAR site boundary with a combined area of 4ha.
- Slieve Bernagh Bog SAC is located adjacent to the EIAR site boundary and has Northern Atlantic wet heaths with *Erica tetralix* (4010), European Dry Heaths and blanket bogs as QI.

- Gortnacullin Bog NHA located to the north of the site has Active blanket bog (7130), wet heath (4010) and dry heath (4030).
- No areas of the site were found to have been surveyed by the Irish Semi-natural Grasslands Survey (ISGS).

18.89. Vascular plant species of conservation concern are listed in Table 6-5. No protected bryophytes recorded within or adjacent to the proposed development. A number of fauna species of conservation concern are recorded in hectad R63 and these are listed in Table 6-6. A number of invasive species are recorded in hectad R67²⁸ and these are listed in Table 6-7. A list of rare or protected species of flora or fauna within 5km of the project site is set out in Table 6-8.²⁹ The Broadford River and Doon Lough NHA are located within the Shannon Estuary North Catchment and hydro-geologically connected to the proposed project. Fish stock assessments were carried out for the Broadford River in 2009 and 2013 by IFI at Broadford Village and where the river drains into Doon Lough. The results are shown in Table 6-9. There is no surface water connectivity between the proposed project and any Freshwater Pearl Mussel (*Margaritifera margaritifera*) catchment.

18.90. Regional and local hydrology and hydrogeology is fully addressed in Chapter 9 'Water' of the EIAR, including regional hydrology maps Fig.9-1 and 9-3. Available data on the WFD River Waterbody Status 2013-2018 for the watercourses which run through the site is assessed in Table 6-10 and the baseline ecological survey results are then addressed in Section 6.4. of the EIAR. Detailed botanical data from relevés recorded at turbine base locations is provided in Appendix 6-2, a habitat map is provided in Fig.6-4 and a map showing the development footprint overlaying the habitat map is shown in Fig. 6-5. A total of fifteen habitats were recorded within the windfarm site including:

- Improved agricultural grassland (GA1)
- Dry meadows and grassy verges (GS2)
- Conifer plantation (WD4)
- Mixed broadleaved woodland (WD1)
- Hedgerows (WL1)

²⁸ NBDC database.

²⁹ NPWS Rare and Protected Species Database

- Treelines (WL2)
- Scrub (WS1)
- Wet Grassland (GS4)
- Dense Bracken (HD1)
- Wet Heath (HH3)
- Upland Blanket Bog (PB2)
- Stone walls (BL1)
- Spoil and bare ground (ED2)
- Earth Banks (BL2)
- Buildings and artificial surfaces (BL3).

18.91. These habitats are described in Section 6.4.1.1 – 6.4.1.11 of the EIAR together with upland eroding rivers (FW1), drainage ditches (FW4) in Sections 6.4.1.12 and 6.4.1.13. Habitats adjacent to the proposed GCR are described in Section 6.4.1.14 with one instance of Oak-birch-holly woodland (WN1) which corresponds to the Annex I habitat ‘old sessile oak woods with Ilex and Blechnum’ in the British Isles (91A0). This occurs in the final section of the GCR ending at Ardnacrusha Power Station. All works will occur within the existing road carriageway and not in adjacent habitats. The proposed GCR will involve 3 no. bridge crossings and 8no. existing culvert crossings with no instream works required. They are shown in Fig. 4-28 and listed in Table 6-12 of Chapter 4 of the EIAR. Methodologies are detailed in Appendix 4-5. The proposed TDR will require temporary accommodation works on the national, regional and local road network. These are described in Fig.4-22a of Chapter 4. The temporary accommodation works at Location 9 due to the proposed blade transition area will result in the temporary loss of habitat in the field to the north of the R466. The habitats present within this area are described in Section 6.4.1.15 and Fig. 4-22b of Chapter 4.

18.92. In summary, the presence of small, fragmented pockets of Wet heath (HH3) with mosaics of Upland blanket bog (PB2) were confirmed at two locations within conifer plantation and the EIAR site boundary, south of T05 and north of T03. These habitats have links with Annex I habitats as described in Section 6.4.1.16 of the EIAR. No works are proposed to take place in these areas. No botanical species listed under the Flora (protection) Order or listed in the Irish

Red Data books and no rare or protected plant species recorded in the desk study were recorded within the wind farm site during the survey effort. All species recorded are common in the Irish Landscape. Two invasive plant species listed on the Third Schedule were recorded within the proposed Wind Farm site, Japanese knotweed (*Reynoutria japonica*) and Rhododendron (*Rhododendron ponticum*). Other low to high impact invasive species recorded within the windfarm site include: Winter Heliotrope (*Petasites fragrans*), Cherry laurel (*Prunus laurocerasus*), Montbretia (*Crocasmia x crocosmiiflora*) and Hardy Fuschia (*Fuchsia magellanica*). Three invasive species listed on the Third Schedule were recorded along the proposed GCR: Giant Hogweed (*Heracleum mantegazzianum*), Japanese knotweed (*Reynoutria japonica*) and Rhododendron (*Rhododendron ponticum*). Fig. 6-6 refers.

18.93. Signs of badger activity were recorded within the site comprising dis-used setts, latrines, scat and snuffle holes mainly concentrated in the northwest of the site nearby T01 and T02 and in the southeast of the site north of T06 and west of T07. Camera traps were deployed at potential mammal den/resting sites (Plate 6-17), but no badger activity was recorded. No otter signs were recorded within the proposed windfarm site, otter prints and scat were recorded along the proposed GCR along the River Blackwater (Clare) under the Blackwater Bridge (ITM:559378. 662470). Otter surveys in the wider area identified a single spraint along the Broadford River under the Killaderry Bridge (ITM 555663, 673479) at a hydrological distance of 7.8km from the windfarm site. Appendix 6-3 provides further detail.

18.94. Full details of bat surveys undertaken in spring, summer and autumn 2022 are provided in the Bat Report (Appendix 6-2) with survey and detector locations shown in Fig 2-1 thereof. A bat habitat appraisal and manual activity surveys were also conducted. Static surveys revealed the windfarm site was mainly used by common pipistrelles (n=58,020) followed by Soprano pipistrelles (n=8,035), Leisler's Bat (n=6,400), Myotis spp. (n=1,707), brown long-eared bat (n=877) with Nathusius' pipistrelle (n=156) and lesser horseshoe bats (50) present in lower numbers. Median activity levels were assessed for each

species. In Spring, Leisler's bat had low median activity across the site, while common pipistrelle had high activity at D05 (*detector location*). Little soprano pipistrelle activity was recorded. In summer, high activity levels were recorded by common pipistrelles with peaks at all detectors by D03. In Autumn, high median activity was recorded at D08 for Leisler's, with common pipistrelle activity peaking at D07. The turbine originally proposed in proximity to D07 was removed during the iterative design process. Manual activity surveys carried out during each season recorded a similar species composition except for Nathusius' pipistrelle which were not recorded. Forest tracks, and edges and trees were assessed as foraging habitat, community corridors and potential roosts. A number of structures were inspected for the presence of bats, none within the EIAR site boundary, with a lesser horseshoe bat roost identified at a derelict house approx. 710m west of T06. This is not located in proximity to any works and will not be affected by the windfarm. No other roosts were identified during 2022 surveys. Frog spawn was recorded in drains and wet area of conifer plantation within the windfarm site, northeast of T4 and southwest of T3. These observations were recorded outside of the infrastructure footprint and no significant breeding habitat (ponds) for common frog were identified within the windfarm footprint but it is accepted that smaller ponded areas and ditches across the site may provide some suitable breeding habitat for the species. Pygmy shrew, Red Squirrel, Pine Marten, Hedgehog, Irish hare and Marsh Fritillary were all recorded within the wider landscape. Scatter patches of devil bit scabious (foodplant of Marsh Fritillary) were found along grassy roadside verges which were searched but no larval webs and no species evidence were recorded inhabiting the windfarm site.

18.95. Full details of aquatic surveys undertaken in July 2022 are provided in the Aquatic Baseline Report (Appendix 6-3). The majority of watercourses surveyed were natural or semi-natural in character, maintained good summer flows and were of high aquatic value for fish and macroinvertebrates with most evaluated as local importance (higher value) given the presence of aquatic species of high conservation value and/or $\geq$ Q4 (good status) water quality. Of note is the presence of Q4-5 (high status) biological water quality sites on the

Kilbane Stream and Ardclooney River requiring strict protection from construction impacts such as siltation, enrichment or hydrocarbons. Fish species recorded are summarised in Section 6.4.2.6.2 and include Salmonids, Brown Trout and Atlantic Salmon in the Broadford and Ardclooney River, Lamprey ammocoetes at 19 no. survey sites in the vicinity of the project, and European eel widespread in low densities on the Broadford River, Kilbane Stream and Ardclooney River. No white-clawed crayfish or eDNA was detected during surveys or in samples collected and the presence of crayfish plague in the Broadford and Ardclooney Rivers supports this absence. No freshwater pearl mussel eDNA was detected in samples with these results considered as evidence of species absence in keeping with known distribution (absence) of the species in the wider survey area. In terms of 'kick-sampling' and Q-value evaluation, no rare or protected macro-invertebrate species³⁰ were recorded in the biological water quality samples³¹ and no rare or protected macrophytes/aquatic bryophytes were recorded at any of the aquatic survey locations. The Annex I habitat '*water courses of plain to montane levels, with submerged or floating vegetation of the Ranunculion Fluitantia and Callitriche-Batrachion or aquatic mosses (3260)*' ('floating river vegetation', FRV) was recorded at sites A14 and A15 on the Broadford River. Sites on the Kilbane Stream (A9 & A13) and Ardclooney River (B3) achieved Q4-5 (high status) with a further 9no. sites: Cloonconry Beg River (A5), unnamed tributary (A4), Kilbane Stream (A8, 11,12 & 13), Killeaghy Stream (A10), Broadford River (A14) and Ardclooney River (B1 & B2) achieving Q4 good status water quality. In general, the biological water quality of the survey area was good with impacts from agriculture noted and not channelisation, causing siltation the primary threat. Supplementary surveys at water crossings along the proposed GCR were undertaken with no Salmonids or European eel recorded, but one Lamprey ammocoete was recorded at the Blackwater (Clare) River (C3) along with evidence of otter footprints and spraint. Otherwise, sites on the Kilbane

³⁰ According to national red lists.

³¹ Taken from n=19 wetted riverine sites in July 2022 and (for proposed GCR) from n=4 wetted riverine sites in March 2024.

Stream (C1) and Blackwater (Clare) River (C3) achieved Q4 good status with the Ballyquin Beg River (C2) achieved Q3-4 moderate status water quality.

18.96. Table 6-13 of Chapter 6 summarises the ecological evaluation of all features outlined in Section 6.2.3. and identifies, with reasoning, the habitats and fauna that are considered to be Key Ecological Receptors (KERs) and therefore the features that are subject to impact assessment in Section 6.6. of Chapter 6. These are:

- Lower River Shannon SAC (002165)
- River Shannon and River Fergus SPA (004077)
- Glenomra Wood SAC (001013)
- Doon Lough NHA (000337)
- Glenomra Wood pNHA (001013)
- Castle Lake pNHA (000239)
- Fergus Estuary and Inner Shannon, North Shore pNHA (002048)
- Linear Habitats (Treelines (WL2), Hedgerows (WL1), Stone walls (BL1) and earth banks (BL2), Mixed broadleaved woodland (WD1)
- Upland Blanket Bog (PB2)/Wet heath (HH3)
- Eroding/upland rivers (FW1)
- Drainage ditches (FW4)
- Badger, Otter, Bats
- Invasive species
- Aquatic and Fisheries Species

A rationale is also provided for habitat and fauna which are not identified as KERs.

Potential Effects

18.97. The EIAR identifies potential environmental effects of the development on biodiversity for the different phases of the development. These are summarised in Table BDY 1 below.

Table BDY 1: Summary of Potential Effects (*Biodiversity*)

Project Phase	Potential Effects
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Do nothing	- The general biodiversity of the proposed windfarm site and proposed GCR would likely remain similar to its current state. - The BEMP would not be implemented leading to no biodiversity enhancement measures.
Construction Phase	<i>Habitat Loss</i> - Table 6-14 details habitat which will be lost to the development footprint of the proposed windfarm. Habitats which are KERs are listed below: (i) Approx. 247.2m of Treelines (WL2) (ii) Approx. 2104.2m of Hedgerows (WL1) and associated stone walls (BL1). 112m of hedgerow will also be lost at the blade transition area (accommodation works). (iii) 0.00ha of Wet Heath (HH3), Upland Blanket Bog (PB2) and Upland Eroding Rivers (FW1) <i>*The proposed GCR will not result in the permanent loss of any habitat being within the existing road categorised as Buildings and Artificial Surfaces (BL3).</i> - The permanent loss of WL1, WL2 and BL1 habitats would not cause any significant fragmentation of habitat connectivity within the landscape and are considered significant at a local geographic scale only. - Potential for a significant indirect effect on the identified aquatic habitats and species at a local geographic scale in the form of pollution during construction resulting in impacts on aquatic features ranging from local (higher value) to a feature of international importance³². - There will be a permanent loss of small patches of fragmented, degraded wet heath (HH3) associated with the footprint of T03, T04 and proposed access roads within firebreaks. The areas to be lost are not included in 2019 Article 17 Report dataset for this habitat as they are dominated by conifer plantation. This impact is considered to be negligible at a local and county scale. - Taking a precautionary approach, it is considered that there is potential for significant effect on peatland habitats adjacent to the site at the local scale from dust. - Potential effect on Glemomra Wood pNHA (001013) via direct impacts of habitat loss as the GCR overlaps with local L3046 which bisects the pNHA. <i>Water Quality</i> - Drainage ditches provide some connectivity with natural watercourses within the site, therefore there is potential for direct impacts (mortality) on any aquatic features associated with the windfarm site. - A direct surface pathway exists between the windfarm site and downgradient watercourses and there is a risk that pollutants and sediment laden surface water run-off could discharge to surrounding ditches and watercourse impacting sensitive watercourses and aquatic species downstream. Sources of pollution: - Silt laden surface water run-off

³² Lower River Shannon SAC, River Shannon and River Fergus SPA and associated QI/SCI species.

	- Release of chemicals, including hydrocarbons, from onsite machinery, concrete and other cement-based products - Drainage and seepage water from excavations - Stockpiled excavated material providing a source of exposed sediment - Construction of cabling trench including small amounts of peat soils, - Erosion of sediment from emplaced site drainage channels. • There is potential for run-off of silt and other pollutants such as hydrocarbons and cementitious material into watercourses downstream of the windfarm site and GCR representing a potential indirect effect on otter in the form of habitat degradation/loss of prey resource through water pollution. This would be considered significant at the local geographic scale only, as impacts would only occur to the local population. • Potential for significant effect on water quality within local and downstream watercourses with hydrological connectivity to Glenomra Wood pNHA (001013), Castle Lake pNHA (000239) and Fergus Estuary and Inner Shannon, North Shore pNHA (002048). <i>Invasive Species</i> • The potential for spread of Rhododendron, Japanese Knotweed and Giant Hogweed to other habitats is categorised as being a permanent, significant effect at the local level. <i>Fauna</i> • Whilst no badger setts were recorded within the windfarm site, baseline surveys identified that the site is being used by a local badger population. If established prior to construction, potential for physical damage or significant disruption of occupied setts would be considered significant at the local geographical scale. • The construction of the project has the potential to result in short-term negative effects on the local bat populations in the form of habitat loss, but no significant effects with regard to loss of commuting and foraging habitat for bats have been identified (due to extensive area of remaining undisturbed habitat and avoidance of the most significant areas of faunal habitat). The felling of plantation forestry (WD4) will result in the creation of woodland edge habitat benefitting feeding and commuting bat species and a potential long-term positive effect. • Impacts from noise and lighting have the potential to result in temporary negative displacement effects on bat populations during construction which would be considered significant at the local geographic scale only. • Works carried out during sensitive periods of the bat lifecycle could result in temporary negative disturbance effects on bat populations considered significant at the local geographic scale only. (Disturbance during the hibernation period could result in a waste of energy and potential starvation and during the maternity period could cause abortions or pup abandonment).
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Operational Phase	Habitats & Water Quality - Following the precautionary principle, there is potential for significant indirect effect on the identified aquatic habitats and species at a local geographic scale in the form of sediment laden run-off during storm rainfall events (<i>impermeable surfaces resulting in additional run-off coupled with increased velocity of flow could increase hydraulic loading resulting in erosion of watercourses</i>). This would also impact aquatic features ranging from Local (higher Value) to a feature of International Importance.³³ Fauna - Potential for significant effects on bat species were identified in the form of collision mortality, barotrauma and other injuries as a result of their potential interaction with wind turbines and considered significant at a local geographic scale. - Potential for significant effects on otter regarding fragmentation were considered due to the addition of new water crossings within the windfarm site. These were considered significant at the local geographic scale only as impacts would occur on the local population.
Decommissioning Phase	- No significant effects on habitat loss. - The same potential effects on water quality, associated aquatic fauna and other terrestrial fauna identified in the construction phase will apply to the decommissioning phase.
Cumulative and In-Combination Effects	The assessment of cumulative impacts was based on a 25km of the proposed project development area. The other plans considered are listed in Section 6.6.1 of Chapter 6 of the EIAR and the other projects considered are detailed in Appendix 2-3. Projects include forestry and agricultural practices, other development/landuses, solar farms and other windfarm developments within 25km and these are detailed in Table 6-26 of Chapter 6. Only the Fahybeg and Carrowngowan Windfarms are within 5km of the proposed windfarm site. The assessment of cumulative effects focussed on KERs and concluded: - There will be no significant residual habitat loss, disturbance, deterioration in water quality associated with the project and therefore it cannot contribute to any cumulative effect, - The project has been sited and designed on habitats of low ecological value with an emphasis on the protection of water features and associated aquatic fauna which minimises the effects on biodiversity, - No significant effects as a result of the proposed development in relation to disturbance, displacement or mortality of faunal species has been identified, - No connection that could potentially result in additional or cumulative impacts was identified, nor was any potential for different or new impacts resulting from the combination of various plans and projects identified. No potential for in-combination effects were identified. <i>n.b. I note that the assessment of cumulative effects did not include the proposed Knockshavno WF, which was at pre-planning at the time.</i>

³³ Lower River Shannon SAC, River Shannon and River Fergus Estuaries SPA and associated QI/SCI species.

	<i>However, I have addressed this in the assessment of in-combination effects in the Stage 2 AA (Appendix 2) to this report and I am satisfied that there is no potential for significant cumulative effects on biodiversity.</i>
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18.98.Mitigation

18.99.The EAIR refers to the suit of mitigation measures embedded within the design and layout of the development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and are also set out in each topic chapter. Measures are extensive and in relation to Biodiversity include:

- The loss of WL1, WL2 and BL1 habitat will be mitigated through the establishment and enhancement of approx. 2,673m of planting comprising native broadleaved trees, shrubs and hedgerow habitat within the proposed windfarm site. This is detailed in the Biodiversity Enhancement Management Plan (BEMP) (Appendix 6-4) and Figures 3-2 and 3-3 thereof.
- Detailed mitigation measures in relation to the protection of water quality during construction is detailed in Chapter 9 (Water) and in summary consist of avoidance of sensitive hydrological features by application of suitable buffer zones and the mitigation measures set out in the ‘drainage maintenance plan’ in Section 4.7 of EIAR Chapter 4 and Section 9.5.2.2 and 9.5.2.5 of Chapter 9.
- Loss of wet heath (HH3) and Upland Blanket Bog (PB2) was mitigated by avoidance of all areas of Article 17 mapped peatland habitats and an iterative design process. The loss of minor, fragmented areas of wet heath is mitigated through the BEMP (Appendix 6-4) which includes for the restoration of 6.18ha of peatland habitats (currently forested) through felling, restoration, linkages with previously fragmented areas of peatland, management and monitoring.
- A Peat & Spoil Management Plan (Appendix 4-2)

- Standard Best Practice measures for control of exhaust and dust emissions.
- Invasive Species Mitigation Measures as described in Section 6.5.2.1.4 of Chapter 6, including a pre-commencement survey, preparation of an Invasive Species Management Plan and Toolbox talks with supervision by a qualified Ecological or Environmental Clerk of Works.
- Measures to avoid disturbance to Badgers and ensure no additional setts have been established since original surveys in line with '*Guidelines For The Treatment of Badgers Prior To The Construction Of National Road Schemes*' (TII 2009).
- Measures to avoid disturbance/displacement and direct mortality to otters and ensure that no otter holts/breeding sites have been established since original surveys as described in Section 6.5.2.2.2 of Chapter 6.
- The mitigation and enhancement measures detailed in the BEMP (Appendix 6-4) will provide additional foraging and commuting habitat for bats resulting in no net loss of linear habitat features within the windfarm site.
- Standard Best Practice measures to minimise noise and disturbance potential to bats. Plant and equipment noise will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001). Lighting will be controlled including by design in accordance with the *Institute of Lighting Professionals Guidance Note 08/23 Bats and artificial lighting in the UK* and the *Dark Sky Ireland Lighting Recommendations*.
- Detailed mitigation measures in relation to bats is provided in the Bat Report (Appendix 6-2) and includes: noise and light restrictions, buffering, blade feathering, linear habitat replanting (BEMP), curtailment, monitoring and a confirmatory pre-construction Bridge Survey.
- The operational phase drainage system is described and shown on the submitted Drainage drawings (Appendix 4-8). Surface water flow paths

and the existing drainage regime will be maintained, and all project drainage water will be captured will be attenuated and released within the same sub-catchments.

18.100. Residual Effects

18.101. With the implementation of mitigation measures, the residual effects are set out in Section 6.5.2.1.1 to Section 6.5.3.2.1 of Chapter 6 in respect of each potential effect. These provide that no significant residual effects on biodiversity will arise or are anticipated.

18.102. Analysis, Evaluation and Assessment: Direct and Indirect Effects.

I have examined, analysed and evaluated Chapter 6 of the EIAR, all of the associated documentation and submissions on file in respect of Biodiversity. I am satisfied that the applicant's understanding of the baseline environment, is comprehensive and that the key impacts in respect of likely effects on biodiversity as a consequence of the development have been identified. Parties to the appeal have raised a number of issues in respect of biodiversity which I address below.

Adequacy of survey effort (Bats)

18.103. Parties to the appeal raised several issues in relation to the adequacy of the bat survey effort which primarily concerned the loss of early spring survey data, that the 2022 survey data was out of date (having regard to relevant guidelines) and the surveys did not meet the minimum requirements as recommended by NPWS. In respect of the loss of spring data I note that data from the initial deployment of automated (static) bat detectors in April-May 2022 was partially lost during a data upload to the cloud. This data loss was replaced by a full new deployment in early June 2022 and the applicant contends that early June data remains valid spring data on the basis of an NIEA³⁴ (2021) opinion that the spring period includes mid-April to mid-June. In any event the data from the first deployment was not fully lost and is presented in the EIAR to provide a qualitative metric of comparison and the

³⁴ Northern Ireland Environment Agency

June data was considered sufficient to assess the early activity of bats across the site. The applicant is of the view that the loss of early spring data was not therefore a significant limitation. I have considered this position and I am in agreement with the applicant, that the partial loss of early spring data is not a significant limitation. I am influenced in this regard by the fact that the data loss was only partial, the loss was mitigated by additional early June data, summer and autumn survey results were consistent and did not identify any anomalies and manual activity surveys validated the static detector results. Otherwise, there are no roosts within the site. The site does not include any designated sites for bat species and is outside of the foraging range associated with the Lesser Horseshoe bat in respect of the Danes Hole, Poulnalecka SAC (000030). I am therefore satisfied that the survey effort does not have a material deficit and is appropriate for the context of the proposed windfarm site.

18.104. Parties to the appeal were also concerned that the 2022 survey data was out of date. The applicant acknowledges this position and responds that the site was revisited in 2023 and 2024 by project ecologists and as there was no change in the ecological baseline position it was determined that there was no need for further surveys. I am satisfied that this position is reasonable, and I do not consider that additional survey work is required.

18.105. Parties to the appeal were also concerned that the survey effort did not meet the minimum requirements advised by NPWS in the pre-planning scoping and consultation exercise. In this regard NPWS advised that the survey period should include a minimum of 30 days in each season, in a variety of weather conditions with detectors at different height levels. In this regard the applicants survey effort can be summarised as follows:

- During Spring there were 12no. Survey nights per detector location (x7), 11no. with 'appropriate weather'.
- During Summer there were 37 no. survey nights per detector (x8), 22 no. with 'appropriate weather', and
- During autumn there were 27 survey nights per detector (x7), 24 no. with 'appropriate weather'.

18.106. These were ground-level static surveys with appropriate weather defined as 'dusk temperatures above 8 degrees, wind speeds less than 5m/s and no, or only light, rainfall'. I am satisfied that the survey was undertaken in a variety of weather conditions but note that the survey effort did not include detectors at different heights or a minimum of 30 days in each season. Notwithstanding this surveys were carried out over 76 days at 22 different detector locations and I am satisfied that the survey effort, inclusive of bat habitat suitability appraisal, roost surveys, manual activity surveys, dusk emergence and dawn re-entry surveys, transect surveys and ground level static surveys, is generally detailed and robust, appropriate for the subject site and that any deficit is not material. I do not consider that additional survey work is required.

Bats

18.107. The applicant states that the baseline bat studies are in accordance with NatureScot (2021) guidance, with seven species recorded in the area and four of these high collision risk species (Leisler's bat, Common pipistrelle, Soprano pipistrelle and Nathusius' pipistrelle). There are no confirmed bat roosts within the footprint of the development and there will be no direct effects on the bat roost identified at the derelict house approx. 710m west of T06. It is stated that whilst there will be some loss of commuting and foraging habitat, this will be compensated for with replacement and additional hedgerows and treelines which will enhance connectivity and habitats for bats with no significant adverse effects on bat populations arising from habitat loss. Operational and cumulative effects are addressed in the EIAR, with an extensive suite of mitigation measures and post construction monitoring proposed. Bat felling areas of existing forestry are in line with NatureScot (2021) guidelines and are an effective mitigation measure to prevent collision of bats with operational turbines.

18.108. Baseline bat survey reports are set out in Appendix 6-2 of the EIAR. These include for the period 2022 survey. The 2022 survey was carried out in the appropriate period between April/May and June to October 2022.

Qualifications and experience of personnel are set out in the report and are appropriate for the survey work carried out. Field survey work included bat habitat suitability appraisal, roost surveys, manual activity surveys, dusk emergence and dawn re-entry surveys, transect surveys and ground level static surveys (7no. deployed at or near turbine locations, and 1no. additional in summer to give a good spatial spread and sample the range of available habitats). Limitations of survey work included the deployment of one detector outside of the range of cattle in a similar habitat with no significant limitations identified as a result of this change, an additional detector in summer which did not present data for the spring season and was not considered to be a significant limitation as similar habitats were well represented, and redeployment of spring detectors in early June due to a data loss in uploaded the initial spring deployment in April/May. This latter limitation was not considered significant, as discussed above. The proposed windfarm site is located outside the foraging range of Lesser Horseshoe bats in respect of Danes Hole, Poulnalecka SAC (000030).

- 18.109. The windfarm site consists primarily of conifer plantation and agricultural grasslands which do not provide roosting habitat of significance for bats and no roosting sites were identified within the windfarm site. A lesser horseshoe bat roost was identified in a derelict house approx. 710m west of T06, but this will not be impacted by the proposed works. The Blackwater Bridge on the proposed GCR was identified as having 'moderate' potential for roosting habitats and no loss of roosting habitat is anticipated as crossing will be by HDD or cable strapping. No significant effects with regards to the loss of, or damage to, roosting habitat is identified, and no mitigation is proposed. The proposed windfarm includes the construction and/or widening of access roads and tracks across forestry and grasslands, together with other infrastructure which will require the felling of existing trees. A total of 13.8ha of conifer plantation and recently felled woodland will be permanently lost within and around the footprint of the proposed windfarm. This is required to allow for construction and to achieve the required buffer distance (turbine to canopy) for the protection of bats. A total of 247m of treeline and 2104m of hedgerow (and

associated stone wall) will be lost to enable widening of existing access tracks and construction of new roads. There will be a loss of 0.05ha of mixed broadleaved woodland to allow for a new water crossing and there will be a temporary loss of 112m of hedgerow at the turbine blade transition area. Given the extensive area of habitat that will remain undisturbed throughout the site and the avoidance of the most significant areas of faunal habitat, no significant effects are predicted with regard to loss of commuting and foraging habitat in advance of mitigation.

- 18.110. Temporary negative displacement effects, significant at a local scale only, are predicted during construction from noise and lighting in the absence of mitigation. Temporary negative disturbance effects, significant at a local scale only, are predicted during bridge crossing works on the GCR if they are carried out during sensitive periods of the bat life cycle (hibernation or maternity) and in the absence of mitigation. Significant effects at a local geographic scale are predicted during operation on high collision risk bat species as a result of interaction with wind turbines (collision mortality, barotrauma) at turbines T03 and T05 and in the absence of mitigation. With implementation of mitigation measures, no significant residual effects are anticipated particularly with regard to collision mortality, barotrauma and other injuries, loss or damage to commuting or foraging habitat, loss of, or damage to, roosts or displacement of individuals or populations.
- 18.111. Having regard to the detailed survey work carried out, I am satisfied that the assessment of likely effects is robust and that significant effects on bat species are likely limited to the local effects on local populations for construction and operation. I do not consider that additional survey work is required, or that the loss of habitat areas is significant. Mitigation measures are in accordance with NatureScot guidelines. Appropriately sized bat buffers will prevent significant collision risk and barotrauma and linear vegetation which is lost will be replaced, enhanced and actively managed over the lifetime of the development, particularly through the BEMP. The development will have no adverse effects on the roost 710m west of T06.

Cumulative effects (bats)

18.112. Cumulative risks to bats are considered in Section 6.6. of the EIAR and in Section 6.4 of the Bat Report (Appendix (6-2)). Essentially, the EIAR concludes that the proposed project will not result in any residual adverse effects on bats, when considered on its own and that the existing, permitted and proposed wind farm sites within 10km of the project are small to medium scale with no potential to contribute to any cumulative adverse effects on any bat populations when considered in-combination. No connection that could potentially result in additional or cumulative impacts was identified.

Slieve Bernagh Bog SAC (002312) and Glenomra Woods SAC (001013)

18.113. Parties to the appeal were concerned that the location of construction works in close proximity to the Slieve Bernagh Bog SAC and within the Glenomra Woods SAC would have likely significant adverse effects on the said Natura 2000 sites and their site-specific conservation objectives. These considerations are addressed in the Stage 1 AA Screening Report (Appendix 1) and the Stage 2 AA (Appendix 2) appended to this report. The potential for impacts on the Slieve Bernagh Bog SAC was screened out at Stage 1 on the basis that no works are proposed within this SAC which is otherwise located upgradient of the proposed windfarm site and with no hydrological connectivity. Given that the habitats of this SAC are terrestrial it was determined that there was no potential for direct or indirect effects. The potential for impacts on the Glenomra Wood SAC was screened in at Stage 1 on the basis of potential for direct impacts given that the proposed GCR works are located within local road L3046 which bisects this SAC. However, at Stage 2 AA it was determined that adverse effects arising from the proposed development could be excluded on this SAC as no direct impacts were predicted and indirect impacts would be prevented by mitigation measures. Please refer to the Stage 2 AA Report appended to this report as Appendix 2 for full detailed information and assessment.

Marsh Fritillary

18.114. Parties to the appeal were concerned at the absence of a Marsh Fritillary Report in the application particulars. I note however the surveys that were undertaken and that whilst scatter patches of devils bit scabious (the food plant of Marsh Fritillary) were found along grassy roadside verges, no larval webs were recorded and there is otherwise no evidence of the species inhabiting the proposed windfarm site. I am therefore satisfied that the assessment position of the application is satisfactory and that there is no evidential basis for requiring additional survey work or a Marsh Fritillary Report.

Birds

18.115. The assessment of potential environment impacts and effects on birds is considered in the next section of this Report at 12.118 and in the Stage 1 AA Screening Report (Appendix 1) and the Stage 2 AA (Appendix 2) appended to this report. As can be seen therefrom I am satisfied that there is no potential for significant environmental effects on Birds.

Hydrology

18.116. The assessment of potential environment impacts and effects on hydrology, including impacts on water quality, habitats and aquatic ecology, is considered in the next section of this Report dealing with water at 12.170 and in the Stage 1 AA Screening Report (Appendix 1) and the Stage 2 AA (Appendix 2) appended to this report. As can be seen therefrom it is considered that subject to implementation of the full suite of mitigation measures, no significant adverse effects will arise.

18.117. Conclusion: Direct and Indirect Effects (Biodiversity)

Having regard to my examination of environmental information as set out above, and in Sections 12.118 (Birds), 12.170 (Water), Appendix 1 (AA Screening) and 2 (Stage 2 AA) to this report, I am satisfied that there is no potential for significant environmental effects on Biodiversity.

18.118. Birds

18.119. Issues Raised

18.120. Parties to the appeal raised issues in relation to impacts on Barn Owl and Hen Harrier. In its EIA the PA opined that the permitted Carrownagowan Windfarm did not appear to be included in the cumulative study area, that there was no attempt to assess impacts on SPA's, birds of conservation concern or those on the Red List, and that a cumulative assessment of impacts on population wide bird behaviour at the strategic level should be undertaken. This largely informed the PA's third reason for refusal.

18.121. Examination of the EIAR

Context

18.122. Chapter 7 of the EIAR deals with Birds. The assessment is undertaken having regard to the requirements of EU Environmental Impact Assessment Directive 2014/52/EU as set out in International and European legislation and National Legislation. National and European Policy and guidance documents are also referenced including specific documents published by Nature Scot (formerly Scottish Natural Heritage). A statement of authority is included.

18.123. Associated Figures and Appendices are:

- Appendix 6-4 BEMP
- Appendix 7-1 Species List
- Appendix 7-2 Survey Effort
- Appendix 7-3 Summary Data
- Appendix 7-4 (a)-(f) Survey Data
- Appendix 7-5 (a)-(d) Confidential Survey Data
- Appendix 7-6 Collision Risk Assessment
- Appendix 7-7 Bird Monitoring Programme

18.124. Assessment approach and methodology includes a desk study, consultation, identification of target species and key ornithological receptors, field surveys, receptor evaluation and impact assessment and assessment

justification. The following resources informed the baseline conditions and assessment:

- Breeding and Wintering Bird Atlas Records
- Bird sensitivity mapping tool (Birdwatch Ireland)
- National Biodiversity Data Centre Records
- Irish Wetland Bird Survey Records
- Rare and Protected Species Dataset
- Carrownagowan Wind Farm Assessment
- The 2022 National Survey of breeding Hen Harrier in Ireland.

Limitations are considered in Section 7.2.6.3, and I note that no significant limitations in the scope, scale or context of the assessment have been identified.

Baseline

18.125. The baseline ornithological conditions are described in Section 7.3 of the EIAR. A Natura Impact Statement (NIS) was prepared for the proposed development, and in accordance with EPA advice this section of the EIAR provides summary findings only in relation to effects on European Sites. Table 7-6 identifies two Special Protection Areas (SPA's) deemed to be within the ZOI of the site:

- River Shannon and River Fergus Estuaries SPA
- Lough Derg (Shannon) SPA

No other nationally designated sites of ornithological significance occur within the potential ZOI. This was informed by the SNH guidance document '*Assessing Connectivity with Special Protection Areas*' (2016).

18.126. The target species recorded within the surveyed area of the wind farm site are listed in Table 7-10 with a summary of breeding and roosting status. This is further summarised together with the receptor evaluation (Section 7.4) of as follows:

- Hen Harrier – confirmed breeding, no regularly used roosts identified within the proposed windfarm site. Wintering population of **County Importance**, breeding population of **National Importance**.
- Merlin – non-breeding, no regularly used roosts identified within the proposed windfarm site. The windfarm is of **no ecological importance** to this species, given how infrequently it was observed.
- Peregrine – confirmed breeding, no regularly used roosts identified within the proposed windfarm site. The windfarm site is associated with a breeding territory that is of **County Importance**.
- Barn Owl – confirmed breeding, no regularly used roosts identified within the proposed windfarm site. Taking a precautionary approach, it is assumed that the breeding pair of barn owl adjacent to the windfarm are a population of **County Importance** and may use habitats within the site for provisioning.
- Kestrel – confirmed breeding, no regularly used roosts identified within the proposed windfarm site. The population recorded at the windfarm was assigned a **County Importance** on the basis of resident/regularly occurring population assessed to be important on a county level.
- Lapwing – non-breeding, no regularly used roosts identified within the proposed windfarm site. The windfarm is of **no ecological importance** to this species, given how infrequently it was observed.
- Red Grouse – probable breeding, no regularly used roosts identified within the proposed windfarm site. Taking a precautionary approach, it is assumed that the individuals recorded at the windfarm are associated with a population of **County Importance**.
- Snipe – non-breeding, no regularly used roosts identified within the proposed windfarm site. Taking a precautionary approach, it is assumed that the individuals recorded at the windfarm are associated with a population of **County Importance**.

- Buzzard – confirmed breeding, no regularly used roosts identified within the proposed windfarm site. Given the conservation status of buzzard, the population at the proposed windfarm site is of no greater than **Local Importance (higher value)**.
- Long-eared owl – non-breeding, no regularly used roosts identified within the proposed windfarm site. The windfarm is of **no ecological importance** to this species, given how infrequently it was observed.
- Sparrowhawk – confirmed breeding, no regularly used roosts identified within the proposed windfarm site. Given the conservation status of sparrowhawk, the population at the proposed windfarm site is of no greater than **Local Importance (higher value)**.

Otherwise, Grey wagtail, meadow pipit, redwing and swift are all red listed (Passerines) in Ireland. Populations recorded at the windfarm site were deemed to be of no greater than **Local Importance (Lower Value)**.

18.127. The following targets species were recorded during waterbird and abundance surveys up to 5km from the proposed windfarm (listed in order of conservation significance): *Golden Plover, Greenland White-fronted Goose, Kingfisher, Little Egret, Whooper Swan, Cormorant, Tufted Duck, Goldeneye, Curlew, Knot, Pochard, Redshank, Scaup, Shoveler, Woodcock*. These species were not observed on or near the site and therefore the EIAR determines that there is no potential for impact from the proposed project.

18.128. A list of all bird species recorded during surveys is provided in Appendix 7-1 and results summary tables for vantage point, breeding, winter walkover, hen harrier roost, waterbird distribution and abundance and non-target species records are presented in Appendix 7-3.

18.129. Table 7-11 then outlines the rationale for including or excluding each target species (recorded during surveys) as a Key Ornithological Receptor (KOR) with the following species included (together with the sensitivity classification determined in the subsequent section 7.4.3):

High Sensitivity

- Hen Harrier (wintering and breeding), (Annex I: EU Birds Directive)

Medium Sensitivity

- Peregrine (all seasons), (Annex I: EU Birds Directive)
- Barn Owl (all seasons), (BoCCI Red Listed)
- Kestrel (all seasons), (BoCCI Red Listed)
- Red Grouse (all seasons), (BoCCI Red Listed)
- Snipe (all seasons), (BoCCI Red Listed)

Low Sensitivity

- Buzzard (all seasons), (Lower conservation concern)
- Sparrowhawk (all seasons), (Lower conservation concern)

Potential Effects

18.130. Potential direct, indirect and cumulative effects of the development on Birds are identified in the EIAR, for the different phases of the development. These are summarised in Table BDS1 below:

Table BDS1: Summary of Potential Effects (Birds)

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing Phase	The character of the bird community will remain much as described in the baseline ornithological conditions. The area that is current mature forestry will change to open (felled trees) which will affect the bird community by providing habitats to birds likely to use pre-thicket forestry for breeding such as Hen Harrier. (<i>Significance not otherwise classified by EIAR</i>).
Construction Phase	<i>Hen Harrier (Winter)</i> <i>Direct Habitat Loss</i> The proposed windfarm is dominated by improved agricultural grassland and commercial forestry which is sub-optimal for wintering hen harrier and there was no record of hen harrier using the small areas of peatland/scrub to the north and south of the site for winter roosting. Hen harrier was observed on 12 occasions during winter season surveys with two roosts identified during the 2022/23 seasons, both in areas of peatland 2.7km and 4.8km from the proposed windfarm. These roosts were used infrequently with hen harrier observed once at each location despite repeated survey efforts. Hen harrier were observed hunting within the proposed windfarm site on one occasion, despite a comprehensive suite of surveys across three winter seasons. As the land lost to the footprint of development is small

	(2.9% of project) and given the infrequency of hen harrier observations at this site, it is considered that there is limited potential to result in ecologically significant habitat loss for hen harrier. This is assessed as low effect significance³⁵ and likely long term constant imperceptible negative effect³⁶. No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> No hen harrier roosting sites were recorded within a 2km radius of the proposed windfarm and there was a very low occurrence rate of the species on site with foraging or commuting hen harrier recorded on one occasion during winter surveys. Based on survey data, there is little potential for significant disturbance effects as hen harrier are not dependent on habitats within or in close proximity to the proposed development infrastructure for foraging or roosting. This is assessed as very low effect significance and likely short-term imperceptible negative effect. Significant effects are not predicted. <i>Hen Harrier (Breeding)</i> <i>Direct Habitat Loss</i> The proposed windfarm is dominated by improved agricultural grassland and commercial forestry which is sub-optimal for breeding hen harrier and there was no record of hen harrier using the small areas of peatland/scrub to the north and south of the site for breeding or foraging. It is acknowledged that there are breeding hen harrier within the wider surrounds of the site with evidence suggesting that they are not dependent on the windfarm site for nesting or foraging. Vantage point surveys observed a male catching prey and carrying it away in June 2022 at a location 1.8km from the nearest turbine. During breeding raptor surveys an adult male was observed on two occasions in April 2021, at a location 2.6km north of the nearest turbine and there was one observation of a ringtail carrying prey at a location 3.6km north of the nearest turbine in June 2022. No breeding territories were located within or adjacent to the windfarm site and with all observations to the north or northwest of the site it is considered likely that the hen harrier activity observed is associated with breeding pairs from Carrownagowan. Hen harrier was observed on 24 occasions during breeding season surveys, four of which were on, or within 500m of the proposed wind farm and this is considered a very low rate of occurrence. It is considered that there is no potential for loss of breeding habitat given that hen harrier are not nesting within the windfarm site and no impact from loss of foraging habitat given the small area of sub-optimal habitat lost to the footprint of development and abundance of suitable foraging habitat that occurs in the wider area such as the Slieve Bernagh Bog SAC to the north of the site. This is assessed as a low effect significance and likely long-term constant slight negative effect.
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³⁵ Percival 2003

³⁶ EPA, 2022

	No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> No confirmed hen harrier breeding territories recorded within 2km of the proposed windfarm, with a very low rate of occurrence (4 over two breeding seasons) of foraging and community hen harrier within the site. The hen harrier observed at the site are likely associated with known breeding territories at Carrownagowan 2.2km to the north. Literature identifies potential for disturbance impacts associated with construction works to occur between 500m and 1000m ³⁷ with disturbance dependent on factors such as topography and line of site. As hen harrier were very infrequently recorded hunting in close proximity to the proposed turbine layout, significant impacts are considered unlikely particularly given the evidence of surveys that they are not dependent on the sub-optimal habitat of the site for foraging. It is considered reasonable to assume that the optimal nature of the SAC habitats and its proximity to breeding territories make it more attractive to foraging hen harrier and that therefore there is little potential for disturbance effects. This is assessed as low effect significance and likely short-term slight negative effect. No significant effects of disturbance are anticipated at the county, national or international level. <i>Peregrine (All Seasons)</i> <i>Direct Habitat Loss</i> Peregrine were observed on 24 occasions within the proposed windfarm during surveys between September 2020 and May 2023 with most observations of birds commuting, circling or foraging including occasional observations during breeding season. No evidence of on-site breeding was recorded; however a confirmed breeding territory was identified approx. 4.1km from the proposed turbine layout. It is considered that it cannot be ruled out that peregrine observed hunting within the windfarm site were provisioning for this nest, however given the separation distance from the territory, the extensive suitable habitat in the surrounding area it was considered that the species is unlikely to be dependent on onsite habitats. This is assessed as low effect significance and likely long-term constant slight negative effect. No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> There were five observations of this species within, or partially within, 500m of the proposed turbine layout during the entire survey effort. Peregrine is documented to become accustomed to various sources of human disturbance³⁸ and therefore it is considered reasonable to conclude that after a period of habituation the population will become accustomed to construction activity which is unlikely to discourage flight activity or foraging. This is assessed as low effect significance and likely short-term slight negative effect.
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³⁷ Ruddock and Whitfield, 2007/ Fernandez-Bellon et al, 2017/ Wilson et al, 2016

³⁸ Ruddock et al, 2007

	No significant effects of disturbance are anticipated at the county, national or international level. <i>Barn Owl (all seasons)</i> <i>Direct Habitat Loss</i> One breeding territory for barn owl was identified during surveys at a location 2.6km from the nearest turbine, which is within foraging range for the species (3km)³⁹. Whilst there were no observations at, or within, 500m of the proposed windfarm, it cannot be ruled out that this nocturnal species did not hunt on site outside of survey hours (dusk to dawn). However, the direct loss of foraging habitat relative to its availability on site will be minimal and substantial areas of both undisturbed suitable breeding and foraging habitat will remain within the wind farm site and wider landscape. This is assessed as low effect significance and likely long-term constant slight negative effect. No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> Barn owl were not observed within the proposed windfarm site during a comprehensive suit of dawn to dusk surveys over two and a half years. As the species are nocturnal, it cannot be ruled out however that this species travelled over the proposed windfarm site between dusk and dawn. Barn owl have a limit of disturbance at 50-100m⁴⁰, however the Forestry Commission of Scotland (2006) recommends a disturbance buffer of 250m around a known nest site where operations should be limited. Given that the known nest site is 2.6km from the nearest turbine, there is no potential for impacts on the nest site and it is not anticipated that construction activity will have a significant impact on the foraging habits of the nesting pair. The proposed windfarm site does not contain habitats unique to the local area and if disturbance were to occur it would not result in the loss of a scarce resource for the local population. This is assessed as low effect significance and likely short-term slight negative effect. No significant effects of disturbance are anticipated at the county, national or international level. <i>Kestrel (all seasons)</i> <i>Direct Habitat Loss</i> Three breeding territories were identified in 2022 (two probable and one confirmed) within, or adjacent to the proposed windfarm and located in sparse treelines or commercial forestry adjacent to improved agricultural grasslands and peatlands. The confirmed territory was 1.3km and the probable territories 0.6km and 1.5km from the proposed turbine layout. There will be minimal loss of breeding habitat, given the extent of similar habitat outside of the proposed turbine infrastructure and direct loss of foraging habitat is small relative to the site area. Substantial areas of undisturbed suitable breeding and foraging habitat will remain within the site and surrounding landscape. This is assessed
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³⁹ Szep et al, 2019.

⁴⁰ Ruddock & Whitfield, 2007

	as low effect significance and likely long-term constant slight negative effect. No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> The windfarm site does not contain habitats unique to the local area and disturbance, if it were to occur, would not result in the loss of a scarce resource for the local kestrel population. Kestrel have brood sizes of four to five chicks and a survival rate of 30% in the first year⁴¹, therefore it is estimated that there would be a population of approx. six adults and three to four juvenile birds by the end of each winter season meaning that only 1.7% of the county population could be impacted. Significant effects are not anticipated given the extensive areas of suitable foraging habitat which exist and will remain in the wider area. This is assessed as low effect significance and likely short-term slight negative effect. No significant effects of disturbance are anticipated at the county, national or international level. <i>Red Grouse (all seasons)</i> <i>Direct Habitat Loss</i> This species was observed within 500m of the proposed windfarm on seven occasions, six of which were within the upland blanket bog in the north and south of the site. The proposed windfarm is predominantly agricultural grassland and conifer plantations, considered to be suboptimal habitat for red grouse. Direct loss of foraging habitat relative to its availability on site will be minimal, substantial areas of suitable breeding and foraging habitat will remain within the windfarm site and wider area. This is assessed as low effect significance and likely long-term constant imperceptible negative effect. Significant habitat loss for this species is not anticipated. <i>Disturbance</i> In addition to the observation of the species within 500m of a turbine (7 occasions) breeding territories were identified within or adjacent to the proposed project. It is considered that disturbance during construction is unlikely to significantly discourage foraging or breeding attempts as the areas of suitable habitat are located at the wider edge or outside the proposed wind farm. A Scottish case study found occurrence of red grouse near wind energy access routes was higher than in the surrounding moor, and populations of red grouse were found to recover within one year after disturbance caused by windfarm construction⁴². This is assessed as low effect significance and likely short-term slight negative effect. Significant displacement effects for this species are not anticipated at the county, national or international level.
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⁴¹ <https://app.bto.org/birdfacts/results/bob3040.html>

⁴² Pearce-Higgins et al, 2012

	<i>Snipe (all seasons)</i> <i>Direct Habitat Loss</i> This species was observed within 500m of the proposed windfarm on seven occasions, and all observations were of individual birds. Whilst there were no confirmed breeding territories, there was a regular occurrence of snipe throughout the year. The loss of habitat is considered minimal, being confined to a narrow corridor and significant areas of suitable nesting and foraging habitat will remain post construction together with an abundance of suitable habitat in the wider area. This is assessed as low effect significance and likely long-term constant imperceptible negative effect. Significant habitat loss for this species is not anticipated. <i>Disturbance</i> Pearce-Higgins <i>et al.</i> (2009) found that breeding snipe showed significant avoidance of turbines extending up to a distance of 400m, also with evidence of avoidance of access tracks. No evidence of breeding territories was observed between September 2020 and May 2023. Whilst disturbance associated with construction works could result in a measurable reduction in breeding density of snipe onsite/around the margins of the proposed windfarm, there is no evidence that snipe breed within the site and significant disturbance effects are not anticipated. Substantial areas of undisturbed suitable breeding and foraging habitat will remain within the site and wider area. This is assessed as very low effect significance and likely short-term imperceptible negative effect. No significant disturbance effects are anticipated. <i>Buzzard (All seasons)</i> <i>Direct Habitat Loss</i> This species was frequently recorded within the proposed windfarm site during breeding and winter seasons, with evidence of breeding in mature woodland/treelines. The construction of the proposed wind farm will not result in a significant loss of foraging habitat as the development footprint is small. There was one confirmed breeding territory, and two probable territories identified within or adjacent to the windfarm site during the 2021 breeding season and two confirmed and two probable breeding territories during the 2022 breeding season. (Appendix 7-5). A confirmed breeding territory was also observed 2.5km from the site during the 2021 season. As the habitats within the windfarm site are not unique, nor a rare resource within the wider area, a significant loss of breeding habitat is not anticipated, and a direct loss of potential foraging habitat will be minimal. This is assessed as very low effect significance and likely long-term constant slight negative effect. No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> Onsite areas and up to a 500m radius of the proposed windfarm has hosted up to three breeding pairs of buzzard between 2021 and 2023 (Appendix 7-5) and this species is resident at the proposed windfarm
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	site. The disturbance associated with construction will result in a measurable reduction in the breeding density of buzzard onsite and a reduction in the amount of available foraging habitat around the margins of the windfarm site, but such habitat (treeline, scrub, adjacent woodland and farmland) is not unique to the site or rare in the wider area. This is assessed as very low effect significance and likely short-term slight negative effect. No significant effects of disturbance are anticipated at the county, national or international level. <i>Sparrowhawk</i> <i>Direct Habitat Loss</i> This species was recorded on seven occasions within 500m of the proposed turbine layout during breeding and winter seasons. As the footprint of the development is small, construction will not result in the loss of a significant amount of foraging habitat. However, within, or partially within, the proposed windfarm site there was one probable breeding territory identified in 2021 (800m from the turbine layout) and one confirmed breeding territory in 2022 (500m from the turbine layout), therefore this is potential for the loss of nesting habitat within the proposed windfarm site. However, these lands are not considered unique or rare in the wider area. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. No significant effects of direct habitat loss are anticipated at the county, national or international level. <i>Disturbance</i> Breeding sparrowhawk were recorded as described above. Construction activity adjacent to the nest sites could cause disturbance of breeding and foraging sparrowhawk which would result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of available foraging habitat within the windfarm. However, these habitats are not considered unique or rare in the wider area. This is assessed as very low effect significance and likely short-term imperceptible negative effect. No significant effects of disturbance are anticipated at the county, national or international level.
Operational Phase	<i>Hen Harrier (Winter)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> No evidence of roosting was recorded within the windfarm site or within 2km of the site, with this absence limiting potential for significant effects on roosting hen harrier. Foraging hen harrier have been recorded to be subject to displacement impacts within a 250-500m radius of turbines⁴³, however foraging/commuting hen harrier were recorded infrequently within the site and were only recorded on two occasions through three winter seasons within 500m of the proposed

⁴³ Pearce-Higgins et al, 2009

	turbine layout. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. Significant effects are not predicted given the low numbers recorded and infrequency of observations. <i>Collision Risk</i> The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.002 collisions per year, or one bird every 584 years. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. The predicted collision risk is considered insignificant over the 35-year lifetime of the project. <i>Hen Harrier (Breeding)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> <i>Effects on breeding sites</i> No evidence of breeding was recorded within the windfarm site, however there were observations of breeding activity over 1.8km from the site. Four breeding seasons were surveyed at Carrownagowan Wind farm (2017-2020) and between two to four hen harrier breeding territories were identified. It is considered likely that the breeding birds observed during surveys are associated with the confirmed nests in Carrownagowan, given all hen harrier breeding activity was observed to the north of the site, in the vicinity of known Carrownagowan breeding territory or flying in that direction. Given the literature cited above in relation to disturbance impacts, and that breeding activity was observed over 1000m from the proposed windfarm, it is considered unlikely that there be impacts on breeding hen harrier. <i>Effects on foraging hen harrier</i> Foraging hen harrier have been recorded to be subject to displacement impacts within a 250-500m radius of turbines⁴⁴, however foraging/commuting hen harrier were recorded infrequently within the site and were only recorded on four occasions through two breeding seasons within 500m of the proposed turbine layout. Significant impacts are not predicted on the basis of low rate of occurrence, sub-optimal foraging habitat and more favourable habitats closer to known nesting sites. This is assessed as very low effect significance and likely long-term constant slight negative effect. No significant effects of disturbance are anticipated at the county, national or international level.
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⁴⁴ Pearce-Higgins et al, 2009)

	<i>Collision Risk</i> The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.05 collisions per year, or one bird every 200 years. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. The predicted collision risk is considered insignificant over the 35-year lifetime of the project. <i>Peregrine (All Seasons)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> There were five observations of this species within, or partially within, 500m of the proposed turbine layout during the entire survey effort. It is considered that the availability of alternative suitable habitat limits the potential for displacement effects and for the documented reasons cited above, that the population will be accustomed to the windfarm in the landscape. This is assessed as low effect significance and likely long-term constant slight negative effect. No significant effects of displacement are anticipated at the county, national or international level. <i>Collision Risk</i> The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.018 collisions per year, or one bird every 54 years. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. The predicted collision risk is considered insignificant over the 35-year lifetime of the project. <i>Barn Owl (All Seasons)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> One breeding territory for barn owl was identified during surveys, 2.6km from the nearest turbine. Forestry Commission of Scotland (2006) recommends a disturbance buffer of 250m around a known nest site where operations should be limited. Given that the known
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	nest site is 2.6km from the nearest turbine, therefore no significant displacement impacts are predicted and furthermore if displacement were to occur there is an abundance of suitable foraging habitat (agricultural grassland) in the wider landscape. This is assessed as low effect significance and likely long-term constant slight negative effect. No significant effects of displacement are anticipated at the county, national or international level. <i>Collision Risk</i> This species was not recorded during vantage point surveys and the potential for collision risk is considered to be negligible based on survey data. Collision related mortality is not likely to significantly impact this species as barn owl fly at low elevation when foraging⁴⁵. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. <i>Kestrel (All seasons)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> <i>Raptor studies have generally found only low levels of turbine avoidance⁴⁶ with some species, such as kestrel, continuing to forage close to turbines⁴⁷. Significant effects are not anticipated given that onsite habitats are not unique and extensive areas of suitable foraging habitat exist and will remain in the wider area. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect.</i> No significant effects of displacement are anticipated. <i>Collision Risk</i> The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.37 collisions per year, or one bird every three years. Annual mortality of adult kestrel has been calculated at 35%⁴⁸ and if 0.37 collisions where to occur per year, it would mean that the losses at the proposed windfarm would increase the annual mortality of the county population by 0.16%. The predicted collision risk is considered negligible. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. No significant effects are anticipated.
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⁴⁵ Barn Owl Trust, 2021

⁴⁶ Hotker et al, 2006

⁴⁷ Madders and Whitfield, 2006

⁴⁸ Orta et al, 2020

	<i>Red Grouse (all seasons)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> Operation is considered unlikely to discourage breeding or foraging attempts within the site or surrounding area. A study by Douglas <i>et al.</i> (2011) found no significant change in the relationships between grouse occurrence and either turbine or track proximity and no evidence for re-distribution in red grouse in response to wind farm operation. Substantial areas of suitable breeding and foraging habitat will remain within the site and surrounding area. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. No significant effects are anticipated. <i>Collision Risk</i> This species was not recorded during vantage point surveys and the potential for collision risk is considered to be negligible based on survey data including the low number of observations and no observations of red grouse flying at the potential collision height. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. <i>Snipe (all seasons)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> Snipe breeding density can be reduced by 50% within 400m of turbines⁴⁹ and disturbance displacement associated with operational turbines could result in a measurable reduction in the breeding density of snipe onsite/around the margins of the proposed windfarm. However, no evidence of breeding was observed for this species between September 2020 and May 2023 surveys and therefore breeding is unlikely to be affected within the proposed windfarm site. Substantial areas of undisturbed suitable breeding and foraging habitat will remain both within the site and wider area post construction. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. No significant effects of displacement are anticipated. <i>Collision Risk</i> The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor
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⁴⁹ Pearce-Higgins et al. 2009

	diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.001 collisions per year, or one bird every 1,105 years. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. The predicted collision risk is considered insignificant over the 35-year lifetime of the project. <i>Buzzard (All seasons)</i> <i>Direct Habitat Loss</i> No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> This species was frequently recorded within the site during winter and breeding seasons as described for construction phase disturbance effects above. Pearce-Higgins (2009) describes that buzzard has been found to show significant turbine avoidance extending to at least 500m. There was a maximum of one breeding territory identified within 500m of the proposed windfarm and extensive areas of suitable foraging and breeding habitat exist and will remain in the wider area and outside 500m of the proposed turbine layout. Additionally, there were 90 observations within 500m of the proposed turbine layout and there will be a measurable reduction in the frequency of commuting and foraging buzzard within 500m of the proposed turbine layout. However it is considered that onsite habitats are not unique and that there is an abundance of suitable habitat for this species beyond 500m from the proposed turbine layout within the site and wider area. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. No significant effects of displacement are anticipated at the county, national or international level. <i>Collision Risk</i> The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.3 collisions per year, or one bird every three years. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. It is considered that the favourable conservation status of this species (Green-listed BoCCI) limits the potential for ecologically significant effects to result and the loss of one bird every three years from the local population is considered of low significance. <i>Sparrowhawk</i> <i>Direct Habitat Loss</i>
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	No new infrastructure is proposed during this phase so there will be no effect. <i>Displacement and Barrier Effect</i> Displacement from turbines is not reported for sparrowhawk, however it is assumed for the purposes of assessment that sparrowhawk show avoidance to a distance of 500m as with other raptors⁵⁰. There was one breeding territory within 500m of a proposed turbine in 2022. The disturbance associated with operational turbines will result in a measurable reduction in the breeding density of sparrowhawk and a reduction in the amount of foraging habitat within the windfarm, but notwithstanding this, extensive areas of suitable foraging habitat exist and will remain in the wider area and outside of 500m from a proposed turbine. It is considered that onsite habitats are not unique, and similar habitats remain outside of the proposed windfarm site. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. No significant effects of displacement are anticipated at the county, national or international level. The species was recorded flying within the potential collision height during vantage point surveys. A 'random' collision risk analysis was undertaken (Appendix 7-6 refers) with three collision risk analysis methods conducted using the minimum, median and maximum rotor diameter. The highest collision result using the maximum blade length of 77.5m calculated a collision risk of 0.004 collisions per year, or one bird every 270 years. This is assessed as very low effect significance and likely long-term constant imperceptible negative effect. The predicted collision risk is considered insignificant over the 35-year lifetime of the project.
Decommissioning Phase	No effect in relation to direct habitat loss. No significant effects identified as per construction and operation phase above.
Proposed Grid Connection Route	For the proposed GCR, the existing (road) habitats does not have potential to support species of conservation interest. On a precautionary basis it is assumed that some temporary disturbance may occur during construction works, however given the extent of suitable habitat in the wider area, significant disturbance effects are not predicted. The effect significance for all KORs is assessed as no greater than low or a likely short-term slight negative effect.
Turbine Delivery Route	For the proposed TDR, the existing (road) habitats does not have potential to support species of conservation interest. On a precautionary basis it is assumed that some temporary disturbance may occur during construction works, however given the extent of suitable habitat in the wider area, significant disturbance effects are not predicted. The effect significance for all KORs is assessed as no greater than low or a likely short-term slight negative effect.
Designated Sites	See Stage 2 AA (Appendix 2) of this Report which determined that adverse effects on Lough Derg (Shannon) SPA and the River Shannon and River Fergus Estuaries SPA (<i>together with Glenomra Woods SAC and Lower River Shannon SAC</i>) could be excluded in view of the

⁵⁰ Pearce-Higgins et al, 2009

	conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.
Cumulative	The assessment of cumulative impacts was carried out in accordance with NatureScot guidance (2012,2018) based on a 25km radius for the county level and 5km for the local level. The other plans considered are listed in Section 7.9.1.1 of Chapter 7 of the EIAR and the other projects considered are detailed in section 7.9.1.2 -7.9.1.2.3. Projects include forestry and agricultural practices, other development/landuses and other windfarm developments within 25km and these are detailed in Table 7-22 of Chapter 7. Only the Fahybeg and Carrowngowan Windfarms are within 5km of the proposed windfarm site. The assessment of cumulative effects focussed on KORs and in particular cumulative habitat loss and displacement associated with operational turbines and this is summarised below: <i>Wintering Hen Harrier:</i> Foraging hen harrier were recorded infrequently within the proposed windfarm. The impacts of habitat loss, disturbance and barrier effects were assessed to be of low significance. No significant effects of collision risk are anticipated at the county, national or international level. The hen harrier are not dependent on the habitat which would be lost on site and are largely foraging and roosting in scrub and heath habitats in the wider area such as in the Slieve Bernagh Bog SAC. No significant cumulative impact on this species were identified within 5km of the proposed wind farm and the Fahybeg and Carrownagowan Windfarms did not anticipate significant effects with mitigation measures in place. There are no significant effects between these two wind farms and in combination there are no cumulative effects with the proposed windfarm. No significant effect were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. No significant residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted. <i>Breeding Hen Harrier</i> There were four observations indicative of breeding activity for this species through the survey period (1.8km and greater to the north), but no breeding territories were located within the proposed windfarm site. The hen harrier is not dependent on the habitat which would be lost on site, and it is assumed that the Slieve Bernagh Bog SAC habitats are favoured by local hen harrier given their suitability and proximity to breeding territories. Foraging hen harrier were infrequently recorded within the site and the impacts of habitat loss, disturbance, displacement and barrier effects were assessed to be of low significance and no significant effects of collision risk are anticipated at the county, national or international level. No significant cumulative impact on this species were identified within 5km of the proposed wind farm and the Fahybeg and Carrownagowan Windfarms did not anticipate significant effects with mitigation measures in place. There are no significant effects between these two wind farms and in combination there are no cumulative effects with the proposed windfarm. No significant effect were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. No significant residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted.

	<i>Peregrine</i> Foraging peregrine were recorded within the proposed windfarm with a confirmed nest approx. 4.1km distant. The impacts of habitat loss, disturbance, displacement and barrier effects were assessed to be of very low significance. No significant collision risk is anticipated. Some of the habitats identified within windfarms within 25km of the proposed windfarm offer some foraging potential for peregrine (<i>agricultural grassland, upland bog and commercial forestry</i>), and there are seven proposed/existing wind energy developments located within the maximum foraging range of peregrine (18km⁵¹), but given the separation distance and that these habitats are not a scale resource, significant cumulative impacts are not anticipated, and no significant effects were reported for any of the windfarms located within a 25km radius. No significant cumulative impact on this species were identified within 5km of the proposed wind farm and the Fahybeg and Carrownagowan Windfarms did not anticipate significant effects with mitigation measures in place. There are no significant effects between these two wind farms and in combination there are no cumulative effects with the proposed windfarm. No significant effect were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. No significant residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted. <i>Kestrel</i> Kestrel were recorded hunting within the proposed windfarm and breeding territories were identified adjacent to the proposed windfarm and wider area. The impacts of habitat loss, disturbance, displacement and barrier effects were assessed to be of very low significance. No significant collision risk is anticipated. Some of the projects within 25km of the proposed windfarm offer habitats with some breeding and foraging potential for kestrel but given the separation distance and that these habitats are not a scale resource, significant cumulative impacts are not anticipated, and no significant effects were reported for any of the windfarms located within a 25km radius. Fahybeg windfarm is within the core foraging range of kestrel (1.8km based off a max. range of 10km⁵²), but the habitats within the site predominantly used for hunting and/or nesting are not rare locally and significant cumulative impacts are not predicted. No significant effects were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. No significant residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted. <i>Red Grouse</i> The Oatfield windfarm is located adjacent to bogland habitats, which have the potential to support red grouse populations and there are three proposed turbines within Oatfield which have the potential to cause displacement of red grouse, however these potential impacts have been offset by enhancement measures. The separation distance between the proposed windfarm and the Oatfield windfarm is large enough that cumulative impacts on red grouse are not anticipated. No significant cumulative impact on this species were identified within 5km
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⁵¹ NatureScot, 2016

⁵² Village, 1990

	of the proposed wind farm and no significant effects were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. Red grouse was not observed during any of the vantage point surveys and was not assessed for collision risk, therefore cumulative collision risk is not considered to be significant as the predicted impact is effectively zero. No significant residual additive, antagonistic or synergistic effects have been identified with regard to habitat loss, displacement or collision mortality, and significant cumulative effects are not predicted. <i>Snipe</i> Snipe were recorded travelling over the proposed windfarm and there were observations of this species using habitats within the proposed windfarm site. The impacts of habitat loss, disturbance, displacement and barrier effects are assessed as up to low significance and no significant effects of collision risk are anticipated. Taking into consideration the reported effects at other windfarms and the predicted effects of the proposed windfarm, no residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted. <i>Buzzard</i> Buzzard were recorded hunting within proposed windfarm in addition to three confirmed and two probable breeding territories between 2021 and 2023. The impacts of habitat loss, disturbance, displacement and barrier effects are assessed to be of very low significance and no significant effects of collision risk are anticipated. The disturbance associated with operational turbines will not significantly impact the breeding population of buzzard onsite, and similar displacement impacts are predicted on other windfarm sites locally. Habitats are not rare and significant cumulative impacts are not predicted. No significant cumulative impact on this species were identified within 5km of the proposed wind farm and the Fahybeg and Carrownagowan Windfarms did not anticipate significant effects with mitigation measures in place. There are no significant effects between these two wind farms and in combination there are no cumulative effects with the proposed windfarm. No significant effect were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. No significant residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted. <i>Sparrowhawk</i> Sparrowhawk was recorded hunting within the proposed windfarm site in addition to one probable breeding territory within 500m of the turbine layout and one confirmed breeding territory off site. The impacts of habitat loss, disturbance, displacement and barrier effects are assessed to be of very low significance and no significant effects of collision risk are anticipated. The disturbance associated with operational turbines will not significantly impact the breeding population of sparrowhawk onsite, and similar displacement impacts are predicted on other windfarm sites locally. Habitats are not rare and significant cumulative impacts are not predicted. No significant cumulative impact on this species were identified within 5km of the proposed wind farm and the Fahybeg and Carrownagowan Windfarms did not anticipate significant effects with mitigation measures in place. There are no significant effects between these two wind farms and in
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	combination there are no cumulative effects with the proposed windfarm. No significant effect were reported for this species for any of the windfarm located within a 25km radius of the proposed windfarm. No significant residual additive, antagonistic or synergistic effects have been identified, and significant cumulative effects are not predicted. The cumulative assessment concludes that following consideration of the residual effects (post-mitigation), the proposed project will not result in any significant effects on the identified KORs or receptors of international, national or county importance.
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18.131. Mitigation

18.132. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the development to avoid potential for significant effects on avian receptors including the design and small footprint of hardstanding areas, the selected route of the GCR to utilise built infrastructure with cables laid underground and the avoidance of wildlife refuge site (waterbodies). Full mitigation measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and are also set out in each topic chapter. For the construction phase a Construction and Environmental Management Plan (CEMP) will be in place as detailed in Appendix 4-3 of Chapter 4. The measures included are proposed as industry best practice rather than to mitigate any significant effect and the details pertinent to birds are summarised below:

- Commencement of works outside of the bird nesting season (1st March - 31st August inc),
- Removal of woody vegetation in compliance with Section 40 of the Wildlife Act 1976-2022,
- Noise limits, control measures, hours of operation and selection of plant items will be considered in relation to avoidance of potential disturbance of birds and all plant and equipment will comply with the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001 as amended (SI 632/2001),
- Water protection measures including silt fences,
- Appointment of Environmental Clerk of Works and Project Ecologist with responsibility for pre-construction bird survey, education of onsite

personnel, management of ornithological issues, guiding contractors to ensure legal compliance and liaison with consenting and regulatory authorities as necessary.

18.133. No operational phase impacts requiring mitigation were identified. During the decommissioning phase, disturbance limitation measures will be as per the construction phase measures.

18.134. Pre-construction confirmatory, Construction, Operational and Decommissioning Phase Surveys (as described in Section 7.7 of Chapter 7) are proposed in accordance with a range of best practice guidance including NatureScot, 2009. A detailed Bird Monitoring Programme (refer to Appendix 7-6) will monitor collision, displacement/barrier effects and habituation during the lifetime of the proposed windfarm with surveys scheduled to coincide with Years 1, 2, 3, 5, 10 and 15.

18.135. Residual Effects

No effect significance greater than Low⁵³, or Slight⁵⁴, was identified for any KOR. Taking this into consideration and the proposed best practice measures, significant residual effects with regard to direct habitat loss, disturbance/displacement or collision mortality are not anticipated.

18.136. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.137. I have examined, analysed and evaluated Chapter 7 of the EIAR, and all the associated documentation presented in the relevant appendices, plans and drawings. I am satisfied that the applicant's understanding of the baseline environment, by way of desk and site surveys is largely comprehensive and that the key impacts on birds/ornithology have been identified. Issues raised by parties to the appeal are considered below.

Hen Harrier

18.138. Hen Harrier were considered in the EIAR including for winter roosting, breeding, foraging, collision risk, habitat loss, disturbance, displacement and

⁵³ As per Percival 2003 criteria

⁵⁴ As per EPA 2022 criteria

barrier effects. Hen harrier were recorded infrequently during extensive surveys with no record of winter roosting or breeding within the site and a very low collision risk is predicted. Given the low occurrence of Hen harrier within or in proximity to the site, the absence of winter roosting or breeding sites, the sub-optimal habitat of the site for this species and the low collision risk all in the context of the extensive survey effort, I am satisfied that the proposed windfarm site is not an important habitat for the species and that significant effects, including cumulative effects, by way of habitat loss, disturbance, displacement or barrier effect or collision risk are not likely.

Barn Owl

- 18.139. Barn Owl were considered within the EIAR with one breeding territory for barn owl identified during surveys at a location 2.6km from the nearest turbine, which is within foraging range for the species (3km). Whilst there were no observations at, or within, 500m of the proposed windfarm over a two-and-a-half-year period, it cannot be ruled out that this nocturnal species did not hunt on site outside of survey hours (dusk to dawn). However, the direct loss of foraging habitat relative to its availability on site will be minimal and substantial areas of both undisturbed suitably breeding and foraging habitat will remain within the wind farm site and wider landscape. The proposed windfarm site does not contain habitats unique to the local area and if disturbance were to occur it would not result in the loss of a scarce resource for the local population. I note a third-party comment that there is a nesting Barn owl within 1m of the proposed TDR site, however I am satisfied that any such nest exists in an established road/traffic environment and any temporary traffic impacts associated with the proposed development are unlikely to be material. As determined in the EIAR were disturbance to occur it would not result in the loss of a scarce resource for the local population. I am satisfied that significant effects on Barn Owl are not likely.

PA concerns and Refusal Reason No.3

- 18.140. The applicant's assessment of likely effects on bird species is based on survey work carried out between September 2020 and May 2023. The survey

spans and exceeds a minimum of two years in accordance with NatureScot guidelines. Surveys include a desk study to identify target species and field surveys comprising vantage point, winter walkover, breeding walkover, distribution and abundance, hen harrier, breeding raptor, woodcock, red grouse and barn owl surveys. KORs are identified and the approach taken is consistent with the NatureScot guidelines and the applicant's assessment of importance of bird species is not unreasonable, having regard to the survey work carried out and species population trends.

18.141. I am satisfied with the applicant's assessment of cumulative effects in the EIAR and confirm that this did include consideration of the permitted Carrownagowan Wind Farm. The PA is simply mistaken in this regard. I am also satisfied that the applicant adequately considered other bird species of conservation concern and/or red listed (Passerines) and that this is evident in Appendix 7-1. I am satisfied with the applicant's assessment that such species are deemed to be of no greater than local importance (lower value) and that further assessment is not necessary. I am otherwise also satisfied that the site is not of ornithological importance for the target species recorded during waterbird and abundance surveys as evidenced in the Stage 2 AA (Appendix 2) to this report and that there is no potential for significant effects on such species.

18.142. In relation to the assessment of cumulative effects, and as stated in the planning assessment section of my report, I consider that the need for a 'strategic level assessment' properly arises under the European Directive 2001/42/EC (the "SEA Directive") in the context of a plan or programme. In the circumstances of this case both the CCDP and WES were subject to SEA and HDA assessment processes as part of the statutory plan making process, which included an assessment of the likely significant effects of implementing the plan (including the proposed zoning(s) and designation(s)) before adoption. The zoning and designation of the site and surrounding lands was informed by this process. At development consent stage, I am satisfied that it is both in order, and appropriate, for the application to present a project level

assessment of cumulative or in-combination environmental effects. In this regard I am satisfied that the cumulative assessment submitted by the applicant is comprehensive and reasonable and that the assessment of cumulative effects in the EIAR did include consideration of the permitted Carrownagowan Wind Farm.

18.143. Conclusion: Direct and Indirect Effects (*Birds*)

18.144. Having regard to my examination of environmental information as set out above and in Appendix 1 and 2 to this report I am satisfied that there is no potential for significant environmental effects on Birds.

18.145. Land, Soils and Geology

18.146. Issues Raised

18.147. Parties to the appeal raise limited issues in relation to land, soils and geology with a general theme expressed that peat bogs are not a suitable habitat for windfarms with a risk of bog burst and peat slide. The PA in its EIA accepts that the identified risks associated with peaty topsoil can be effectively managed through standard design and construction mitigation measures to ensure the short and long term stability of the site. However, the PA considers that the location of the settlement ponds which will manage runoff from the onsite borrow pit are not identified nor is the design for same specified. The PA opines that it is difficult to see how or where such settlement ponds could be located and that this presents a considerable risk of major accident or emergency in a 'bog burst' type scenario after excessive rainfall.

18.148. Examination of the EIAR

Context

18.149. Chapter 8 of the EIAR deals with Land, Soils and Geology. The assessment is undertaken having regard to the requirements of European legislation, National legislation and policy including the Heritage Act, 1995, as

amended and the relevant good practice guidance set out in Section 8.1.4. A statement of authority is included.

18.150. Assessment methodology is described in Section 8.2. It includes a desk study of specified data sources to collect relevant geological data to supplement site walkover surveys and site investigations, baseline monitoring and site investigations, scope and consultations. Site walkover surveys, including geological mapping and investigation were undertaken on 8th September 2022, 13th July 2023 and 12th October 2023. Geotechnical ground investigations and a peat stability assessment were undertaken to map the distribution and depth of peat together with an assessment of the mineral subsoil/bedrock conditions beneath the peat and this informed the final design. Specifically, site investigations included: 67no. peat probes (April 2021-August 2023), gouge core samples (September 2022 & October 2023), visual assessment, 17no. trial pits and 34no. dynamic cone penetration tests (July 2022, December 2023, January 2024), walkover surveys, and logging of subsoil exposures.

Associated Figures and Appendices are:

- Appendix 4-2 Peat and Spoil Management Plan
- Appendix 8-1 Geotechnical and Peat Stability Assessment Report

18.151. The study area was limited to the EIAR site boundary, and it was considered that there is no potential for the project to affect land, soils or the geological environment outside of the proposed project site. Limitations are considered in Section 8.2.6, and I note that no limitations or difficulties were encountered during the preparation of Chapter 8 Land, Soils and Geology.

Baseline

18.152. The baseline environment is described in Section 8.3 of the EIAR.. The topography of the site is described as highly variable ranging from -90 to 440m OD (metres above Ordnance Datum), containing some very steeply sloping

ground and located on the western slopes of Glengalliagh and Lackareagh Mountains and on the southern slopes of Cragnamurragh Mountain.

- 18.153. It is noted that the GCR is located entirely in the public road corridor. Elevations along the proposed GCR are noted as ranging from -270m OD (at the proposed onsite substation) to -20m OD in the vicinity of Ardnacrusha 110kV Electrical Substation.
- 18.154. Land use within the windfarm site comprises agricultural land, coniferous forestry and smaller areas of peat bogs and heathlands, verified by walkover surveys and with no significant landcover changes recorded⁵⁵. A total of 4 no. turbines are located in agricultural lands (T01, T02, T06 & T07) to the west, and 3 no. within forested areas (T03, T04 & T05) to the east. The proposed onsite 38kv substation and associated compound/set down area are located in an area which was recently felled (at the time of site visit). The temporary blade transition compound on the R466 is noted as agricultural. The length of the GCR is noted, together with the bridge crossings and public roads carriageways within which it is located. It is noted that the GCR passes through agricultural and urban lands.
- 18.155. Soils and subsoils are considered in Section 8.3.3, with a subsoil geology map for the windfarm site shown in Fig. 8-1. In terms of the key proposed windfarm infrastructure 3no. turbines (T01, T06 & T07) are mapped on acid shallow well drained mineral soils, T02 on acid deep well drained mineral soils and 3 no. turbines (T03, T04 & T05) together with the proposed onsite substation, borrow pit, compound and set down area located on acid, shallow, rocky, peaty mineral soils. 6 no. turbines, the onsite substation, borrow pit compound and set down area are underlain by bedrock outcrop. The nature of the soils and subsoils were confirmed by the site investigations revealing that peat is not widely present across the site and where it is recorded, it is typically shallow in nature, averaging at 0.52m with 83% of peat probes recording peat depths $\leq$ 1m. Peat depth was found to exceed 2m in only one location, with the deepest peat recorded at 3m approx. 660m

⁵⁵ Historic Corine land cover maps (1990-2018)

southeast of T05. A peat depth distribution plot is shown in Fig. 8-2. According to peat probe investigations no peat was recorded at T01, T02, T06 and T07, the met mast and access roads. A peat depth of 0.5m was observed along the spur road to T05 and peat depths at T03 and T04 were less than 0.5m. Peat depth at the construction compound was recorded as 0.5m. The peat probe dataset was supplemented by gouge cores which found that peat depth at infrastructure locations was shallow ranging from 0 to 0.25m with no significant deposits encountered at any infrastructure locations and subsoils noted to be brown, gravelly silt/clay. Site investigations were completed with rotary boreholes, trial pits, dynamic probes and CBR tests the results of which are detailed in Appendix D of the Geotechnical and Peat Stability Assessment Report (Appendix 8-1). Based on same the ground conditions at the windfarm site can be summarised as follows:

- Topsoil was encountered typically in 0.2-0.4m thickness, occasionally comprising of peaty topsoil
- The topsoil was underlain by glacial till, comprised of sandy gravelly silty clay, frequently with low cobble content and occasional beds of gravel, soft or firm in upper horizons and becoming stiff at depth
- Weathered Greywacke bedrock was encountered at depths ranging from 2.2-2.5m, and
- Slightly more competent Greywacke bedrock was recorded at depths ranging from 2.5-6m.

18.156. A site investigation map is presented in Fig. 8-4. Bedrock Geology is considered in Section 8.3.4 of the EIAR. A bedrock geology map of the area is shown in Fig. 8-5. The proposed windfarm site is underlain by the 'Broadford Formation' (www.gsi.ie) comprised of fine to conglomeratic graded greywacke and greywacke sandstone. Several (5 no.) mapped faults underlying the windfarm site are noted, but due to age (Ordovician to early Devonian) are not considered to be of significance. Walkover surveys corresponded to the bedrock geology mapped by the GSI. The mapped sandstone, bedrock, siltstone and limestones in the area of the TDR and GCR is noted. In terms of the geological resource importance, the wind farm site is mapped for crushed rock aggregate potential with the majority of the site having high to very high

potential for a bedrock quarry, and the site could be used at the 'sub-economic' local scale for construction purposes. There are no geological heritage sites located within the proposed windfarm site, along the GCR or in the vicinity of the temporary blade transition compound. A map of local geological heritage sites is attached as Fig. 8-6. There are no known areas of soil contamination within the windfarm site, along the GCR, TDR or in the vicinity of the temporary blade transition area.

- 18.157. Peat Stability Assessment is considered in Section 8.3.8. of the EIAR. The Geotechnical and Peat Stability Assessment Report is attached in Appendix 8-1. The report investigates the geotechnical and peat-related characteristics of the windfarm site based on published geology and data obtained from surveys and investigations. Hydrological, hydrogeological and ecological factors were assessed and interaction undertaken throughout the iterative design process. The report was done in accordance with Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (PLHRAG, Scottish Government, 2017) and Guidelines for the Risk Management of Peat Slips (MacCulloch, 2006) and included lessons learned from recent failures such as Shass Mountain, Co. Leitrim (2020) and Meenbog, Co. Donegal (2020). The assessment included a desk study, peat stability investigations, a quantitative Assessment and a qualitative Assessment. The 'quantitative' assessment results included a drained and undrained analysis for all areas where peat $\geq 0.5\text{m}$ in thickness and the purpose of the analysis was to determine the Factor of Safety (FoS) of the peat slopes at the windfarm site with the minimum required FoS 1.3 based on BS6031:1981 Code of Practice for Earthworks (BSI, 2009). The FoS obtained from both the undrained and drained analysis was greater than 1.3 at all locations indicating a 'low' probability or likelihood of peat slide occurrence. A qualitative assessment of peat stability based on the Guidelines for the Risk Management of Peat Slips (MacCulloch, 2006) was also carried out. This assessment deemed the probability/likelihood of a peat slide occurrence at the borrow pit, T03 and T04 and along the access road to T03 to be medium with the slope angle at these locations ranging from 4.6 to 23.7° likely to contribute

to a peat slide. In addition, the peat depth along the access road to T03 (between chainage T3+350 and T3+400) is recorded as being 1.2m and probably likely to contribute to a peat slide. The proposed onsite substation, BESS compound, construction compound are assessed as having a 'low' likelihood of peat slide occurrence with all other areas deemed to have no likelihood of a peat slide occurrence. The report opines that whilst a qualitative assessment can provide valuable insights, a quantitative analysis offers a more informed and data-driven understanding of the risk of peat stability by examining numerical data specific to the proposed site. The quantitative assessment resulted in FoS values of 3.6 to 146.9 (undrained) and 1.4 to 58.8 (drained), with FoS values above 1.3 deemed to have a negligible probability of instability once mitigation/control measures are implemented. The report includes recommendations and mitigation measures for construction work in peatlands to ensure that all works adhere to an acceptable standard of safety, with the risk rating reduced to 'low' provided all mitigation measures are adhered to. The Geotechnical and Peat Stability Assessment indicates an acceptable margin of safety and that the site is suitable for the proposed project.

- 18.158. Based on the aforesaid, the soils and peat at the site is classed as being of low importance, with bedrock geology classed as medium importance where it could be used on a sub-economic scale.

Potential effects

- 18.159. Potential direct, indirect and cumulative effects of the development on Land, Soils and Geology are identified in the EIAR, for the different phases of the development. These are summarised in Table LSG1 below:

Table LSG1: Summary of Potential Effects (Land, Soils and Geology)

Project Phase	Potential Direct, Indirect And Cumulative Effects
Do Nothing	No change. Neutral impact in context of EIAR.
Construction Phase	Negative, slight, direct, permanent likely effect on land (land take).

	• Negative, slight/moderate, direct, likely, permanent effect on peat, subsoil and bedrock due to relocation within the windfarm site. • Negative, slight, direct, permanent, likely effect on soils and subsoils along the GCR. • Negative, slight, direct, short-term, unlikely effect on peat, subsoils and bedrock from leakage and spillages of hydrocarbons. • Negative, slight, direct, short-term, likely effect on peat and subsoils by erosion and wind action. • Negative, direct, slight, high probability impact on soil, subsoils and bedrock (erosion GCR). • Negative, slight, direct, permanent, likely effect on peat, subsoil and weathered bedrock due to felling operations. • Negative, slight, direct, permanent likely effect on peat and subsoils (peat instability and failure)
Operational Phase	• Negative, indirect, imperceptible, short-term, likely effect on peat, subsoil and bedrock (from site road maintenance) • Negative, direct, slight, short-term, unlikely effect on peat, subsoil and bedrock (from site vehicle/plant use) • Negative, direct, slight, short-term, unlikely effect on peat, subsoil and bedrock (from oils in transformers)
Decommissioning Phase	• No significant effects on the land, soils and geological environment will occur during the decommissioning stage.
Cumulative	• There is no potential for significant cumulative effects. The only pathway for in-combination effects with other off-site projects and plans is via the drainage and off-site surface water network and this is assessed in Chapter 9 Hydrology & Hydrogeology.
Risk of Major Accidents and Disasters	• There is a risk of (unclassified) landslide. The residual risk is deemed to be negligible/none. A full assessment is set out in Chapter 16.
Human Health	• Potential health effects (unclassified) mainly arise through the potential for soil and ground contamination. The project is not a recognised source of pollution so the potential for effects is very low in the operational phase. During construction hydrocarbons volumes will be small and managed in accordance with best practice. Potential residual effects are imperceptible.

18.159.1. **Mitigation**

18.160. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the development and in respect of each potential effect in Section 8.5. Full Mitigation Measures are set out in Chapter 18 of the EIAR -‘Schedule of Mitigation & Monitoring’. Measures in relation to land, soils and geology include:

- Mitigation by design utilising existing road network, agricultural and forestry tracks, placement of turbines and associated infrastructure in areas of shallow peat and suitable ground conditions,
- Measures set out in the Peat and Spoil Management Plan (Appendix 4-2),
- Proposed tree felling works in accordance with best practice Forest Service regulations, policies and strategic guidance documents as well as Coillte and DAFM guidance,
- The mitigation and control measures set out in the Geotechnical and Peat Stability Assessment (Appendix 8-1),
- Use of aggregate from authorised quarries in road and hardstand maintenance,
- Vehicle, fuelling, storage, spillage and emergency plans set out in the CEMP (Appendix 4-3) and in the Environmental Management Plan (thereof).

18.160.1. Residual Effects

18.161. With the implementation of mitigation measures, no significant residual effects on land, soils or geology will occur.

18.162. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.163. I have examined, analysed and evaluated Chapter 7 of the EIAR, and all the associated documentation presented in the relevant appendices, plans and drawings. I am satisfied that the applicant's understanding of the baseline environment, by way of desk and site surveys is largely comprehensive and that the key impacts on birds/ornithology have been identified. Issues raised by parties to the appeal are considered below.

18.164. Risk of Peat Slide/Burst

18.165. Parties to the appeal expressed a concern that the proposed windfarm was located within peatland, which is unsuitable for wind energy development and presents a risk of landslide or bog burst. Peat Stability was considered in the EIAR which included a desk study, peat stability investigations, a

quantitative assessment and a qualitative assessment in accordance with best practice guidelines and with regard to lessons learned. The 'quantitative' assessment results included a drained and undrained analysis for all areas where peat $\geq 0.5\text{m}$ in thickness and the purpose of the analysis was to determine the Factor of Safety (FoS) of the peat slopes at the windfarm site with the minimum required FoS 1.3 based on BS6031:1981 Code of Practice for Earthworks (BSI, 2009). The FoS obtained from both the undrained and drained analysis was greater than 1.3 at all locations indicating a 'low' probability or likelihood of peat slide occurrence. A qualitative assessment deemed the probability/likelihood of a peat slide occurrence at the borrow pit, T03 and T04 and along the access road to T03 to be medium. The proposed onsite substation, BESS compound, construction compound are assessed as having a 'low' likelihood of peat slide occurrence with all other areas deemed to have no likelihood of a peat slide occurrence. The EIAR includes recommendations and mitigation measures for construction work in peatlands to ensure that all works adhere to an acceptable standard of safety, with the risk rating reduced to 'low' provided all mitigation measures are adhered to. The Geotechnical and Peat Stability Assessment indicates an acceptable margin of safety and that the site is suitable for the proposed project. I note that proposed windfarm site is primarily located within agricultural land and coniferous forestry with smaller areas of peat bogs and heathlands. Peat is not widely present across the site. I am satisfied given the conclusions of the qualitative and quantitative assessments and the safe margin for the FOS, that there is no significant risk of peat slide/failure as a consequence of the proposed development.

18.166. *Risk of 'Bog Burst' at Borrow Pit*

18.167. The PA was concerned that given the change from rock to peat and spoil within the borrow pit, that there was a risk of a 'bog burst' type event after a period of excessive rainfall. This concern was based on the absence of design for the borrow pit and settlement ponds and an opinion that there was an insufficient area available to manage surface waters from the borrow pit

given its proximity to the Gap Road. Having examined the application documentation, plans and particulars I am satisfied that the concerns of the PA in this regard are unfounded. I am satisfied that the applicant has provided technical detail and design specifications for the borrow pit and the settlement ponds in Appendix 4-8 of the EIAR. A collector drain, with a series of settlement ponds and treated water discharge points is clearly detailed on the technical drainage drawings which takes surface water from the borrow pit to the opposite (downslope) side of the public road and where there is no land constraint in relation to the arrangement of this infrastructure. Furthermore, the construction and reinstatement of the borrow pit is further detailed in Appendix 4-2 (Peat and Spoil Management Plan) of the EIAR. This will be achieved by the construction of cells within the borrow pit for the placement of spoil materials which will ensure their safe placement, grading and stability. The borrow pit will be profiled to a maximum gradient of 5% to ensure stability and promote revegetation. A cut-off drain will be constructed upslope of the borrow pit in order to intercept overland flows and divert them around the borrow pit prior to discharge via a buffer zone on the downslope side (of the pit). A series of open drains will be constructed within the pit to isolate runoff containing increased concentrations of suspended solids and the drainage system will include check dams to attenuate flow and provide additional storage capacity during exceptional rainfall events. The settlement ponds are an additional mitigation measure designed with a modular approach to accommodate varying runoff volumes. Accordingly, I am satisfied that there is no significant risk of a 'bog burst' type event associated with the design and surface water management arrangements of the borrow pit.

18.168. Conclusion: Direct and Indirect Effects (*Land, Soils & Geology*)

18.169. Having regard to my examination of environmental information as set out above I am satisfied that there is no potential for significant environmental effects on Land, soils or geology.

18.170. Water (Hydrology & Hydrogeology)

18.170.1. **Issues Raised**

18.171. Issues were raised in the course of the planning application, in the decision made by the PA and in third party observations to the appeal in respect of water including: hydrological connectivity to downstream European Sites; risks to biological water quality and ecosystem integrity as a result of siltation, enrichment and/or hydrocarbons; disruption to groundwater flow regimes; pollution risks from cementitious products and washout (breach of European Communities Environmental Objectives Regulations) and compliance with the Water Framework Directive 2000/60/EC.

18.172. In particular the PA determined in its AA process that it was unable to conclude beyond reasonable scientific doubt that the proposed development would not adversely affect the integrity of downstream European Sites (*River Shannon SAC and River Shannon and River Fergus Estuaries SPA*) having regard to the peat and spoil management proposals, surface water management plans and the WFD Assessment and this informed the PAs second reason for refusal. This is considered in the analysis, evaluation and assessment section of my report, and in the Stage 1 AA Screening Report (Appendix 1) and Stage 2 AA (Appendix 2) given that the primary considerations concern Natura 2000 sites and their site-specific conservation objectives. The IFI raised standard considerations in relation to the protection of the inland fishery resources which are conditionable matters.

18.173. **Examination of the EIAR**

Context

18.174. Chapter 9 of the EIAR deals with Water (Hydrology & Hydrogeology). The assessment is undertaken having regard to the requirements of European legislation, National legislation and policy and the relevant good practice guidance set out in Section 9.1.4. and 9.1.5. A statement of authority is included.

18.175. Assessment methodology is described in Section 9.2. It includes a desk study of specified data sources to collect relevant hydrological,

hydrogeological and meteorological data to supplement site walkover surveys, drainage mapping and site investigations, scope and consultations. Site walkover surveys, including drainage mapping, hydrological monitoring, surface water flow monitoring, field hydrochemistry and grab sampling was undertaken on 8th September 2022, 13th July 2023 and 12th October 2023. The assessment methodology describes a 'source-pathway-target' model to assess potential impacts on downstream environmental receptors using EPA impact descriptors. The main associated Figures and Appendices are:

- Appendix 4-2 Peat and Spoil Management Plan
- Appendix 4-3 CEMP
- Appendix 4-4 Surface Water Management Plan
- Appendix 4-8 Drainage drawings
- Appendix 8-1 Geotechnical and Peat Stability Assessment Report
- Appendix 9-1 Flood Risk Assessment
- Appendix 9-2 Lab Reports
- Appendix 9-3 Water Framework Directive

18.176. The study area for hydrological (surface water) and hydrogeological (groundwater) impact assessment is defined by the regional surface water catchments and groundwater bodies within which the project is located as detailed in Section 9.3.3. and 9.3.8. Limitations are considered in Section 9.2.6, and I note that no limitations or difficulties were encountered in the preparation of this Chapter.

Baseline

18.177. The receiving environment is described in the context of settlements, land use, public roads and topography as previously described in preceding sections of this report.

18.178. Having regard to average annual rainfall (AAR) and actual evaporation (AE), effective rainfall (ER), which represents the water available for runoff and groundwater recharge is calculated as 926mm/year. Having regard to the soil and subsoil conditions of the site established in the preceding chapter and

consisting of peat and peaty soils coverage, steeply sloping topography and low to moderate permeability of the underlying bedrock, it is considered that the site will refuse a high proportion of potential recharge (estimated at 210mm/yr) and that hydrology is characterised by high surface water run off rates (estimated at 631mm/yr). Climate change predictions are considered, and extreme rainfall depths were used to form the basis of drainage hydraulic design.

- 18.179. The proposed wind farm site is located across two regional surface water catchments, the Lower Shannon surface water catchment and Hydrometric Area 25D (HA 25D) to the east and the Shannon Estuary North surface water catchment and Hydrometric Area 27 (HA 27) to the west, both within the Shannon River Basin District. More locally the proposed windfarm lies within the catchment of the Ardclooney River which rises near the summit of Moylussa and flows to the southeast, 1km east of the windfarm site before discharging to Lough Derg 5km to the southeast. The site is also drained by the Glenomra River which flows to the north-west approx. 1km southwest of the site. Several mountain streams rise on the slopes of Lackareagh and Glengalliagh mountains and flow southwest through the site before discharging to the Glenomra River. Many of these streams are unnamed with the exception of the Ailleenagommaun Stream (Clonconry Beg Stream⁵⁶) which flows 200m north of T07 and 250m south of T06, and Kilbane Stream which flows to the south 220m east of T02. The Glenomra River flows west to Broadford Village, where downstream it is referred to as the Broadford River, before discharging to Doon Lough 6.7km west of the proposed windfarm site. The proposed GCR includes three watercourse crossings (L3022-8 over the Ailleenagommaun Stream, L3022-8 over the Glenomra River at Ahnagor Bridge, and L3022-8 over Ballquin Beg Stream⁵⁷) and one watercourse crossing over the Blackwater River along the R463 at Blackwater Bridge. Regional and Local Hydrology Maps are provided in Fig. 9-1 and 9.2

⁵⁶ As referred to by the EPA

⁵⁷ Unnamed but as referred to by EPA.

- 18.180. The windfarm site is drained by several 1st and 2nd order streams, which originate within the site boundary before flowing downslope and discharging to the Ardcloony River to the east and the Broadford River to the southwest. An existing drainage map for the site is shown in Fig. 9-5 which shows connectivity with downstream EPA mapped streams/rivers. The risk of flooding at the windfarm site is very low due to the elevated and sloping nature of the site and the high density of mountain streams which flow rapidly downslope. The blade transition area, which will be in use for approx. 8 months, is located in flood zone C and is at a low risk of flooding. The proposed GCR is at a low risk of flooding but there are areas which maybe prone to flooding along the Blackwater River and which may require a postponement of works during heavy rainfall. A Flood Risk Assessment is included in Appendix 9-1.
- 18.181. Biological Q-rating² (water quality) data for EPA monitoring points is shown in Table 9-9 for the Lower Shannon and the Shannon Estuary North surface water catchments with status rating from Q3-3 (moderate) to Q4-5 (high) (Kilbane Stream). The Broadford and Ardcloony Rivers have a Q4 (good) status. Field hydrochemistry measurements (for surface watercourses draining and directly downstream of the site and GCR) and the results of surface water grab samples are shown in Tables 9-10 and 9-11.
- 18.182. Ground water baseflow contribution to local streams is expected to be very low all year round and overall, the hydrology of the windfarm site is dominated by surface water runoff. Ground water vulnerability at the site is mapped by GSI as 'High' to 'Extreme' due to the thin coverage of peat/soils, with 6 no. turbines, the onsite substation, construction compound and storage area mapped in areas of 'extreme' ground water vulnerability. However, due to the low permeability of the underlying bedrock aquifer, groundwater flow paths are short with recharge emerging close by and discharging into local surface water streams meaning there is low potential for groundwater dispersion and movement within the aquifer and surface water drains, streams and rivers are more vulnerable to contamination from human activities. No impacts on

groundwater quality are anticipated at the temporary blade transition area due to the shallow nature of works. At the GCR ground water is most vulnerable in the 2.4km length underlain by a regionally important Karst Aquifer, with vulnerability mapped by GIS as 'Low' to 'Moderate'. There are no karst features in the area of the windfarm site or blade transition area. A map of karst features is shown in Fig. 9-9.

18.183. 4 no. local groundwater bodies underlie the windfarm site, temporary blade transition area and GCR as set out in Table 9-13 with all achieving 'good' status in the 3 no. WFD cycles (2010-2015, 2013-2018 and 2016-2021). These GWBs have been deemed to be 'not at risk' of failing to meet their respective WFD objectives and no significant pressures have been identified.

18.184. A total of 5 no. surface water bodies (SWBs) downstream of the proposed windfarm site in the Shannon Estuary North surface water catchment have been deemed to be at 'risk' of failing to meet their respective WFD objectives. This includes: Broadford _010, _020 7 _030 river waterbodies, Castle Lake waterbody and the Upper Shannon Estuary Transitional waterbody. The risk status of the Duin lake waterbody and the Owenogarney _060 SWB are currently under review. The remaining SWBs in this catchment have been deemed 'not at risk' of failing to meet their WFD objectives. A total of 3 no. river waterbodies downstream of the proposed windfarm in the Lower Shannon surface water catchment have been deemed to be 'at risk' of failing to meet their WFD objectives. These are the Ardclony _010, Blackwater (Clare)_020 and the Shannon (Lower)_050 SWBs. Further downstream the Limerick Dock waterbody is also 'at risk'. A summary of the WFD status and risk result for SWBs in the vicinity and downstream of the project is shown in Table 9-14.

18.185. Hydrological flow paths and connectivity between the proposed project and designated sites is detailed in Fig. 9-11. The hydrological connectivity of the project to the following designated sites is identified:

Shannon Estuary North surface water catchment:

- Doon Lough NHA (000337). The site is hydrologically connected to this NHA via the Glenomra and Broadford Rivers over a 6.4km hydrological flow path.
- Danes Hole, Poulnalecka SAC/pNHA (00030). This site is located downstream of Doon Lough and the site is hydrologically connected via the Broadford and Owenogarney Rivers over a 11.7km hydrological flow path.
- Castle Lake pNHA (000239). The site is hydrologically connected to this NHA via the Broadford and Owenogarney Rivers over a 16.38km hydrological flow path.
- The Ratty River Cave SAC (002316). The site is hydrologically connected to this sac via the Broadford and Owenogarney Rivers over a 19.32km hydrological flow path.
- The Lower River Shannon SAC (002165). The site is hydrologically connected to this NHA via the Broadford and Owenogarney Rivers over a 29.24km hydrological flow path.
- The Fergus Estuary and Inner Shannon. North Sore pNHA (002048). The site is hydrologically connected to this NHA via the Broadford and Owenogarney Rivers. Straight line distance 20.6km.
- The River Shannon and Fergus Estuary SPA (004077). The site is hydrologically connected to this SPA via the Broadford and Owenogarney Rivers over a 31.93km hydrological flow path.

Lower Shannon surface water catchment:

- The Lower River Shannon SAC (002165). The site is hydrologically connected to this NHA via the Ardcloony River over a 6.3km hydrological flow path.

The proposed GCR is mapped to cross the Glenomra Wood SAC and pNHA (001013) and is otherwise drained by the Glenomra River with hydrological connection to Doon Lough NHA, Danes Hole, Poulnalecka SAC/pNHA and Castle Lake pNHA.

18.186. In terms of groundwater resources, as a result of GSI database limitations, it is assumed that there is a groundwater well source at each local house location. Nearby mapped groundwater wells is included at Fig. 9-12 with the accuracy limitation noted. In terms of surface water resources there is 1 downstream Drinking Water Protected Area (DWPA) in the Shannon Estuary North Catchment located at Castle Lake with hydrological connectivity via the

Owenogarney and Broadford Rivers. The Shannon (Lower)_060 SWB is identified as a DWPA downstream of the project within the Lower Shannon Catchment. (EPA 2021 3rd Cycle Catchment Reports).

18.187. The following ground water receptors were identified for impact assessment: The poor bedrock aquifer underlying the proposed windfarm site, the poor, locally important and regionally important aquifers underlying the proposed GCR, the WFD status of GWBs under the project site and local private ground water abstractions on lands surrounding the proposed wind farm site. Surface waters are the main sensitive receptors due to the local hydrological regime characterised by high runoff rates and low volumes if groundwater recharge, The following surface water receptors are identified for impact assessment:

- Glenomra, Broadford and Ardcloony Rivers and their associated tributaries downstream of the proposed windfarm site. These watercourses are considered to be of high to very high importance based on their assigned EPA Q-ratings,
- The Glenomra River, Glenomra Wood Stream, Bridgetown and Blackwater Rivers and the River Shannon along the proposed GCR,
- Local watercourses downstream of TDR works, and
- The WFD status of all SWBs downstream of the proposed project site.

Potential Effects

18.188. The EIAR identifies the potential for a range of environmental effects on water. The likely significant effects (potential direct, indirect and cumulative) as identified in the EIAR, are summarised in Table WR1 below:

Table WR1: Summary of potential effects (Water) * effects are pre-mitigation.

Project Phase	Potential Effects
Do Nothing	Existing land use would continue. This is considered neutral. The opportunity to capture part of Clare's valuable wind energy resource would be lost together with the opportunity to contribute to the Government and EU targets for renewable energy and a reduction in greenhouse gas emissions. In terms of hydrology, existing surface water drainage regime would continue to function. There may be a slight increase in rainfall as a

	result of climate change resulting is changes in local recharge and runoff volumes.
Construction Phase	<i>Tree Felling</i> A total of 13.8ha of forestry will be permanently felled (4.7% of EIAR boundary). Potential effects mainly occur from: • exposure of soil and subsoils due to vehicle movements or extraction methods resulting in a source of suspended sediment which can become entrained in surface water runoff, • entrainment of suspended sediment in watercourses due to vehicles tracking through watercourses, • damage to roads resulting in a source of suspended sediment, • release of sediment attached to timber in stacking areas, and nutrient release. Pathways are drainage and surface water discharge routes. Receptors are SWBs Glenomra, Broadford and Ardclony Rivers and tributaries. Effects are assessed as indirect, negative, significant, temporary and likely on surface watercourses and associated water-dependent ecosystems. <i>Earthworks</i> Construction phase activities, including access road, turbine base/hardstand, compound, met mast, substation and underground cabling construction will all require varying degrees of earthworks resulting in excavation of peat and mineral subsoil, significant cut and fill is required and potential sources of sediment laden water include: • Drainage and seepage water resulting from excavations • Stockpiled excavated material providing a point of source of exposed sediment, and • Erosion of sediment from emplaced site drainage channels. • This can result in the release of suspended solids, an increase in the suspended sediment load, increased turbidity which could affect water quality and fish stocks downstream. Pathways are drainage and surface water discharge routes. Receptors include surface waters in the vicinity and downstream of the windfarm including Glenomra, Broadford and Ardclony Rivers and tributaries and associated water-dependent ecosystems and all watercourses and associated water-dependent ecosystems downstream of the proposed GCR including Glenomra River, Glenomra Wood Stream, Bridgetown, Blackwater and Shannon River. Effects are assessed as negative, significant, indirect, temporary and likely on downstream watercourses and associated water-dependent ecosystems. <i>Works within Hydrological Buffer Zones</i> Whilst the majority of proposed work areas are located outside of delineated 50m natural watercourse buffers, the following work areas encroach upon the delineated zones: • New Watercourse crossing over Cloonconry Beg Stream between T06 and T07, • Upgrade of existing crossing along the Gap Road 380m west of the proposed borrow pit,

	• New crossing over Kilbane Stream, 300m south of the met mast, • Cut and fill at each of the above watercourse crossings, • Cut and fill associated with upgrades to the Gap Road immediately east of Kilbane Village, • New roads and associated watercourse crossings over 2 no. new tributaries of the Cloonconry Beg Stream, 220m to the southeast and 120m north of T06 respectively, • Cut and fill at each of these new crossings, • Upgrade works along the Gap Road to the west of the proposed borrow pit, and • Cut and fill associated with new proposed roads and existing roads in the vicinity of streams (not mapped by EPA). • Due to the close proximity of these works to rivers and streams, works could result in the release of suspended solids to surface waters, an increase in the suspended sediment load resulting in increased turbidity affecting water quality and fish stocks downstream. Pathways are identified as drainage and surface water discharge routes. Receptors are surface waters in the vicinity and downstream including Glenomra and Broadford Rivers and their tributaries and associated water-dependent ecosystems. Effects are assessed as negative, significant, indirect, temporary and likely on downstream watercourses and associated water-dependent ecosystems. <i>Excavation Dewatering</i> • Some minor groundwater/surface water seepages will likely occur in turbine base and substation excavations and cable trenching. This will create additional volumes of water and inflows will require management and treatment to reduce suspended solids. Pathways are identified as overland flow and site drainage network. Receptors are surface waters in the vicinity and downstream including Glenomra, Ardcloony and Broadford Rivers and their tributaries and associated water-dependent ecosystems. All watercourses and associated water-dependent ecosystems downstream of the proposed GCR (Glenomra River, Glenomra Wood Stream, Bridgetown, Blackwater and Shannon River). Effects are assessed as indirect, negative, significant, temporary and unlikely on surface water quality and water-dependent ecosystems. <i>Groundwater Levels During Excavation Works</i> • Small scale temporary dewatering may occur at some excavations with the potential to temporarily effect local groundwater levels. This temporary effect will be short and transient, very localised and of small magnitude. No impacts are predicted from the proposed GCR. Pathways are groundwater flowpaths. Receptors are groundwater levels within the underlying Lough Graney and Tulla Newmarket on Fergus GWBs. Effects are assessed as negative, indirect, temporary, imperceptible and unlikely on local ground water levels. <i>Use of Hydrocarbons</i>
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	• Accidental spillage during refuelling (of construction plant with petroleum hydrocarbons) is a significant pollution risk to groundwater, surface water and associated ecosystems and to terrestrial ecology. • The accumulation of small spills of fuels and lubricants during routine plant use can also be a pollution risk. • Hydrocarbons have a high toxicity to humans, all flora and fauna including fish and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms which can rapidly deplete dissolved oxygen in waters resulting in the death of aquatic organisms. Pathways are groundwater flowpaths and site drainage network. Receptors are surface waters in the vicinity and downstream of the project including Glenomra, Ardclony and Broadford Rivers and their tributaries and associated water-dependent ecosystems. All watercourses and associated water-dependent ecosystems downstream of the proposed GCR (Glenomra River, Glenomra Wood Stream, Bridgetown, Blackwater and Shannon River). Effects are assessed as negative, indirect, slight, short-term and unlikely on local groundwater quality. Effects are assessed as indirect, negative, significant, short-term and unlikely on surface water quality downstream. <i>Use of Cement-based Products</i> • Concrete and other cement-based products are highly alkaline and corrosive and can have significant impacts on water quality. Entry of such products into the site drainage system, surface water runoff, and surface watercourses or directly in watercourses represents a risk to the aquatic environment. • Peat ecosystems are also dependent on low pH hydrochemistry and they are extremely sensitive to the introduction of high pH alkaline waters. Batching of wet concrete, washing out of transport and placement of machinery are most likely to generate risk of cement-based pollution. • Placed concrete (such as turbine foundations) can also have minor local effects over time. Pathways are site drainage network. Receptors are surface waters in the vicinity and downstream of the project including Glenomra, Ardclony and Broadford Rivers and their tributaries and associated water-dependent ecosystems. All watercourses and associated water-dependent ecosystems downstream of the proposed GCR (Glenomra River, Glenomra Wood Stream, Bridgetown, Blackwater and Shannon River). Effects are assessed as indirect, negative, moderate, short-term and likely on surface watercourses and water-dependent ecosystems. <i>Wastewater</i> • Release of effluent from on-site temporary wastewater treatment systems has the potential to impact on groundwater and surface water quality if site conditions are not suitable for on-site percolation units. Impacts on surface water quality could affect fish stocks and aquatic habitats.
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	Pathways are groundwater flowpaths and site drainage network. Receptors are surface waters in the vicinity and downstream of the project including Glenomra, Ardclony and Broadford Rivers and their tributaries and associated water-dependent ecosystems. Effects are assessed as negative, significant, indirect, temporary and unlikely on surface water quality and negative, slight, indirect, temporary and unlikely on local groundwater quality. <i>Morphological Changes to Surface Water Courses (within windfarm site)</i> • There are 3 no. watercourse crossings over EPA mapped watercourses. These are: Cloonconry Beg Stream between T06 and T07, unnamed tributary of the Cloonconry Beg Stream 380m west of the borrowpit and the Kilbane Stream 330m of the proposed met mast. There are 2 no. crossings over unmapped natural 1st order streams. These are: 220m southeast of T06 and 120m north of T06. • Several manmade forestry and agricultural drains are deeply incised and will be culverted where road crossings are proposed. Pathways are the site drainage network. Receptors are surface waters in the vicinity and downstream including Cloonconry Beg and Kilbane Stream and Broadford and Ardclony River. Effects are assessed as negative, moderate, direct, long-term and likely on surface water flows, local stream morphology and surface water quality. <i>Morphological changes to Surface Watercourses (along proposed GCR)</i> The proposed GCR includes 5 no. crossings over EPA mapped watercourses and 8no. culvert crossings over unmapped watercourses. The proposed crossing methods are: • HDD crossing the Cloonconry Beg Stream along the L30028. • Works within the bridge deck crossing the Glenomra River at Ahnagor Bridge. • Bridge strapping at the Blackwater Bridge. • Culvert crossings will be via flat formation crossing. Pathways are runoff and surface water flowpaths. Receptors are all watercourses and associated water-dependent ecosystems downstream including Glenomra River, Cloonconry Beg Stream, Glenomra Wood Stream, Bridgetown, Blackwater and Shannon River. Effects are assessed as negative, moderate, indirect, temporary and likely on downstream surface water flows and surface water quality. <i>Local Groundwater Wells</i> • The biggest risk to groundwater wells is from groundwater contamination due to accidental release of hydrocarbons and cement-based products. • There are no downgradient public or group scheme groundwater supply sources that be impacted by the proposed project. • Dwellings located on lands surrounding the windfarm site will not be affected in terms of private groundwater well supplies due to the shallow nature of the proposed GCR works. No effects will
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	occur to groundwater levels or quantity due to the elevated nature of the windfarm site. Pathways are groundwater flowpaths. Receptors are down-gradient groundwater supplies (groundwater wells). Effects are assessed as negative, imperceptible, indirect, long-term and unlikely on down gradient water supplies. <i>Use of Siltbuster.</i> - Siltbusters are regularly used to remove suspended sediments by means of chemical dosing and sedimentation. However potential overdosing with chemical agents means there is a risk of chemical carryover in port-treatment water which could result in negative effects on downstream water quality. The benefits of using a siltbuster in an emergency situation is assessed as considerable. Pathways are drainage and surface water discharge systems. Receptors are all surface waters downstream and associated water-dependent ecosystems downstream including Glenomra, Broadford and Ardclony Rivers. Effects are assessed as negative, slight, indirect, temporary and unlikely on down gradient water quality. <i>Horizontal Directional Drilling (HDD) along the proposed GCR.</i> - It is proposed that directional drilling will be undertaken at an unnamed Bridge over the Cloonconry Beg Stream along the L3022-8 to prevent direct impacts on the watercourse. However indirect impacts from sediment laden runoff during the launch pit and reception pit excavation works may arise. There is also an unlikely risk of fracture blow out and contamination of the watercourse with drilling fluid. Pathways are surface water and groundwater flows. Receptors are all watercourses and associated water-dependent ecosystems downstream including Cloonconry Beg Stream and the Glenomra River. Effects are assessed as negative, moderate, indirect, temporary and likely on surface water quality. <i>Bridge Strapping along the proposed GCR.</i> - In an unmitigated scenario, the proposed bridge strapping works over the Blackwater Bridge could result in negative effects on local and downstream surface water quality. Pathways are surface water and groundwater flows. Receptor is the Blackwater River. Effects are assessed as negative, moderate, indirect, temporary, likely on surface water quality. <i>Turbine Delivery Route Works</i> - Minor earthworks are required for the construction of the blade transition area along the TDR. Pathways are surface water flowpaths. Receptors are down-gradient surface water quality. Effects are assessed as indirect, negative, slight, short-term and likely. <i>Karst Bedrock and Karst Features</i>
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	- A section of the proposed GCR (2.4km) is underlain by a regionally important Karst Aquifer. The closest mapped feature is a swallow hole 2.2km east of the proposed GCR. Any potential alteration in groundwater quality has the potential to impact the Karstic Bedrock Aquifer. Pathways are groundwater recharge and surface water drainage. Receptors are local Karst Features and the Regionally Important Karst Aquifer. Effects are assessed as indirect, negative, slight, unlikely effect on karst features and karst aquifer. <i>Downstream surface water abstractions</i> - The Castle Lake DWPA is considered distant (17.8km) from the proposed windfarm site and downstream of Doon Lough, which provides a dilution effect and acts as a hydrological buffer. It is considered that there is no potential for effects to occur. - Any potential surface water quality effects which arise as a result of the proposed GCR have the potential to impact on the Shannon (Lower)_060SWB DWPA. It is not considered that the windfarm site has potential to impact this DWPA as it is downstream of Lough Derg which acts as a hydrological buffer. Pathways are surface water flowpaths. Receptors are down-gradient water quality. Effects are assessed as indirect, negative, imperceptible, short-term and likely on the Shannon (Lower)_060 DWPA. <i>Hydrologically Connected Designated Sites.</i> The following sites are included in the assessment; - Doon Lough NHA - 6.35km hydrological pathway downstream of the project. - Glenomra Wood SAC/pNHA encroached upon by 170m of the proposed GCR. - Lower Shannon SAC – 6.8km hydrological pathway downstream of the proposed windfarm site via the Ardclony River and 6km downstream of the proposed GCR via the Blackwater River. - All other designated sites have been screened out due to their distant location and the large volumes of water within the associated waterbodies. All other hydrologically connected designated sites are located downstream of large lake waterbodies (Lough Derg and Doon Lough) which is a hydrological barrier between the project and: Danes Hole, Poulnalecka SAC, Castle Lake pNHA, The Ratty River Cave SAC, the Fergus Estuary and Inner Shannon, North Shore pNHA, and the River Shannon and Fergus Estuary SPA. Pathways are surface water flowpaths. Receptors are down gradient water quality in Doon Lough NHA, Glenomra Wood SAC/pNHA, and Lower Shannon SAC. Effects are assessed as indirect, negative, slight, short-term and likely on Doon Lough NHA, Glenomra Wood SAC/pNHA, and Lower Shannon SAC.
Operational Phase	<i>Progressive Replacement of Natural Surface with Lower Permeability Surfaces</i> Progressive replacement of peat or vegetated surface with impermeable surfaces could potentially result in an increase in

	the proportion of surface water runoff reaching the surface water drainage network. • This could increase runoff from the site and increase flood risk downstream. • During storm rainfall events, additional runoff coupled with increased velocity of flow could increase hydraulic loading, resulting in erosion of watercourses and impact on aquatic ecosystems. Pathways are site drainage network. Receptors are surface waters (Glenomra, Broadford and Ardclony Rivers) and associated water-dependent ecosystems downstream of the site. Effects are assessed as negative, slight, indirect, permanent, likely on all downstream surface water bodies. <i>Runoff resulting in Contamination of Surface Waters.</i> • The potential for silt-laden runoff is much reduced, all permanent drainage controls will be in place and disturbance and excavation works will be complete. Some minor maintenance works may be completed which will be of a very minor scale with potential sources of sediment laden water only arising from surface water runoff from small areas where new material is added. This could result in the release of suspended solids. Pathways are drainage and surface water discharge routes. Receptors are surface waters (Glenomra, Broadford and Ardclony Rivers and their tributaries) and associated water-dependent ecosystems downstream. Effects are assessed as negative, slight, indirect, temporary and likely on downstream surface water quality. <i>Surface Water and Groundwater WFD Status.</i> • There is no direct discharge to downstream receiving waters. The qualitative status of the receiving SWBs will not be altered by the project (considering mitigation). • There is no direct discharge to groundwaters. The qualitative status of the receiving GWBs will not be altered by the project (considering mitigation).
Decommissioning Phase	• Similar to those associated with construction phase but of less magnitude. • It will be possible to reverse or reduce some of the construction effects by rehabilitating constructed areas such as turbine bases and hardstands. This will be done by covering with soil to encourage vegetation growth and reduce runoff and sedimentation. • Cabling in the GCR will remain in situ rather than excavating and removing it. • Decommissioning will be carried out in accordance with a Decommissioning Plan (Appendix 4-7). No significant effects on the hydrological and hydrogeological environment will occur at decommissioning stage.
Risk of Major Accidents and Disasters	• The main risk is related to peat stability. A Geotechnical and Peat Stability Assessment Report (Appendix 8-1) concludes that the risk of peat failure at the site is low.

	Flooding can also result in major accidents or disasters downstream of an event. The increased flood risk associated with the project is assessed as low.
Potential Health Effects	- Potential impacts on surface and groundwater contamination which may have negative effects on public and private water supplies and DPWAs is addressed above with no potential for effects or no potential for significant effects. - Flooding of property can cause inundation with contaminated flood water. Flood waters can carry waterborne disease and contamination/effluent. Exposure to flood waters can cause temporary health issues. A detailed flood risk assessment (Appendix 9-1) has shown that the downstream risk of flooding is very low as the long-term plan for the site is to retain and slow down drainage water. On site drainage control measures will ensure no downstream increase in flood risk.
Cumulative Effects	A cumulative hydrological and hydrogeological study area is shown in Fig. 9-15. The study area has been delineated as follows: - There is considered to be no potential for effects to occur downstream of Doon Lough. - There is considered to be no potential for effects to occur downstream of Lough Derg. - A 200m zone of the proposed GCR is considered appropriate when considering potential cumulative effects on the water environment. - The Bridgetown (Clare)_010 WFD river sub-basin was included due to the temporary blade transition compound. <i>Cumulative effects with Agriculture</i> In an unmitigated scenario the project would have the potential to interact with agricultural activities and contribute to a deterioration of downstream surface water quality through the emissions of elevated concentrations of suspended solids and ammonia. With mitigation measures detailed in Section 9.5.2, 9.5.3 and 9.5.4. it is considered that there will not be a significant cumulative effect associated with agricultural activities. <i>Cumulative effects with Forestry</i> Given the occurrence of several forestry blocks within the proposed windfarm site and given they drain to the Ardclony and Glenomra Rivers, there are potential cumulative effects on downstream water quality and quantity. With mitigation measures detailed in Section 9.5.2, 9.5.3 and 9.5.4. it is considered that there will not be a significant cumulative effect associated with commercial forestry activities. <i>Other Wind Farm Developments</i> - Two permitted/proposed windfarms partly overlap with the cumulative study area. - T01 and T02 within the permitted Fahy Beg wind farm are located in the study area, these turbines are located within the Broadford-010 WFD river sub-basin. This area is drained by the Glenomra/Broadford River.

	• T10 within the proposed Oatfield wind farm is within the study area. This turbine is located in the Broadford_030 WFD river sub-basin and drained by the Broadford River. • In an unmitigated scenario there may be some significant construction effects on the downstream Glenomra/Broadford River. The EIARs for the said windfarms detail a suite of best practice mitigation measures to ensure the developments do not in any way have a negative effect on downstream surface water quality and quantity. It is therefore considered that there will be no significant cumulative effect on the hydrological/hydrogeological environment with other wind farms in the study area. <i>Other Wind Farm Grid Connection Routes</i> The following GCRs were found to overlap with the proposed project: • 800m overlap with the GCR associated with the proposed Knockshavno WF in the townland of Castlebank. • 8.4km overlap with the GCR associated with the Carrownagowna WF along the L3022-8, R466 and L3046 and 800m along the L3056. • 2.1km overlap with the GCR associated with the permitted Fahy Beg WF consisting of 400m along the L3046 and additional overlap along the L3056. • In an unmitigated scenario there may be some significant construction effects on the downstream receiving watercourses. The EIARs for the said windfarm developments detail a suite of best practice mitigation measures relating to underground cabling routes to ensure the developments do not in any way have a negative effect on downstream surface water quality and quantity. It is therefore considered that there will be no significant cumulative effect on the hydrological/hydrogeological environment with other GCRs in the study area. <i>Wastewater Discharges</i> Section 4 trade effluent discharge locations were identified within the study area as follows: • Keelgrove Construction Ltd located within the Broadford_030 WFD river sub-basin downstream of the proposed windfarm. • Keelgrove Construction Ltd located within the Blackwater (Clare)_020 WFD river sub-basin along the proposed GCR. Discharges to the Blackwater River. • Barry's shop located within the Blackwater (Clare)_020 WFD river sub-basin along the proposed GCR. • ESB Ardnacrusha located in the North Ballycannan_010 WFD river sub-basin in the vicinity of the proposed GCR. These discharges are licenced and required to comply with the emission limit values set in respective discharge licences. It is considered that there will be no cumulative effects associated with the proposed project and licenced Section 4 discharges within the study area. <i>Other Developments</i>
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	Planning applications within the study area identified new dwellings or renovations of existing dwellings or farm buildings. Bases on the scale of works and the temporal period of likely works, no cumulative effects are identified. Other large-scale developments include the proposed extraction of sand and gravel from a greenfield site to the north of the R466 (Ref. 2460230). This application was accompanied by a hydrogeological assessment which details mitigation measures for the protection of water quality/quantity. No cumulative effects are identified. A desk study of applications within 200m of the proposed GCR identified the aforesaid applications and permitted Medical centre (ABP 317705), residential development (ABP 248074), solar farm (ABP 316043) and upgrade of electrical network (Ref. 211232). Due to the small scale and transient nature of the proposed GCR works no potential for cumulative effects is identified.
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18.188.1. **Mitigation**

18.189. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter.

18.190. Measures are significant, comprehensive and extensive in relation to Water and the focus is to prevent pollutants and silt/sediment entering surface waters and receiving watercourses. This is to be achieved via a detailed and comprehensive suite of integrated mitigation measures which are based on conformity with best practice regulations and guidance, avoidance by design, pre-emptive site drainage management, timing of works with regard to seasons and weather, drain inspection and maintenance, surface water quality monitoring, Source controls, in-line controls, and treatment systems. All mitigation measures are included in a Construction and Environmental Management Plan (CEMP) and an Environmental Clerk of Works (ECoW), supported by a Project Ecologist/Ornithologist and Project Hydrologist, will oversee construction works and audit implementation of the CEMP and all mitigation measures.

18.191. The mitigation measures which respond to the specific threats identified include:

Tree (Clear) Felling:

- Conformity with best practice Forest Service regulations & code of practice, Coillte and DAFM guidance,
- A 50m hydrological buffer zone will be maintained, with most of the project infrastructure located outside of this buffer zone. Only 0.6ha (of 19ha) of proposed tree felling is within the proposed 50m hydrological buffer zone. In this area a minimum buffer zones of 10m on moderate slopes, increasing to 15m for steep and 20m for very steep slopes will be applied leading to aquatic zones.
- Control of machine combinations, operation, maintenance, refuelling and traverse patterns with use of brash mats to support vehicles on soft ground.
- Silt fences (double or triple where necessary) placed down gradient to slow water flow, increase residence time and allow settling.
- Suspension or scaling back of works if heavy rain is forecast.
- Drain inspection and maintenance. Surface water quality monitoring (before, during and after operations) with full detail in the Surface Water Management Plan (Appendix 4-4 of EIAR).

Earthworks/all construction activities:

- As above.
- Avoidance measures including by application of 50m buffer zone from hydrological features.
- Pre-commencement temporary drainage works including blocking any existing dry forestry drains that intercept the works area with down gradient check dams/silt traps, installing clean water interceptor drains upgradient of works areas, installing check dams and silt traps on all forestry and road drains with surface water flows, and installing a double silt fence perimeter down slop of works areas within the 50m buffer zone,
- Source controls including interceptor drains, vee drains, diversion drains, erosion and velocity control measures such as use of sand bags. Small working areas with covered stock piles etc,
- In-line controls as above and including oversized swales, straw bales, weirs, silt fences, collection sumps, sediment traps, pumping systems, settlement ponds etc,
- Treatment systems including sumps and ponds, storage lagoons, sediment traps and settlement ponds, proprietary settlement systems such as 'silt buster' etc.
- Integration of the proposed wind farm drainage network with the existing forestry drainage network by: no direct discharge to existing drainage

other than from interceptor drains (which will convey clean runoff); placing silt traps in existing drains upstream of any streams where construction/felling is taking place, which will be diverted to interceptor drains or culverted under works, discharge of run-off from hardstanding areas to settlement ponds and buffered outfalls to vegetated surfaces; buffered outfalls promoting percolation of drainage waters across vegetation; and drains running parallel to roads will be upgraded including with velocity and silt control measures, with buffered outfalls added to protect downstream surface waters.

Borrow Pit

- This was a particular concern of the PA. It is proposed that excavated peat/subsoil (spoil) will be stored in the excavated borrow pit in addition to use for landscaping throughout the site. The borrow pit is located outside of the 50m buffer zone and is an enclosed area within which it is opined that drainage can be easily managed. This will be achieved through silt fences, straw bales and biodegradable matting with drainage pumped to settlement ponds as required with overflow through controlled overflow pipes. It is anticipated that pumping will be intermittent depending on rainfall amounts. The borrow pit settlement ponds have been designed to allow for a 24hr retention time, which is the highest level of protection recommended by the EPA. Once the pit has been seeded and vegetation is established, the risk to downstream surface water is significantly reduced.

Settlement ponds

- Designed for 1 in 10-year flows with a built-in redundancy (+20%) to account for climate change effects on rainfall.

Hydrocarbons:

- Inspection and certification of plant,
- On-site refuelling using a mobile double skinned fuel bowser, (which itself will be filled off-site) with drip trays and absorbent mats,
- Use of trained personnel only with permit,
- Lock system on refuelling equipment. Inspections for leaks and damage,
- Fuel storage areas bunded with drainage system and oil interceptor,
- An emergency plan to deal with spillages is included in the CEMP (Appendix 4-3) with spill kits available.

Cement Products:

- No batching of wet concrete products will occur on site with use of a ready-mixed supply of wet concrete products and where possible emplacement of pre-cast elements (for culverts and concrete works),
- Only chute cleaning will be carried out on site with wash waters undertaken at lined concrete washout ponds,
- Concrete pouring only during dry weather, with the pour site kept free of standing water and plastic covers ready in case of sudden rainfall event.

Dewatering

- As above with the additional use of a mobile 'siltbuster' for onsite emergencies.

Groundwater during Extraction

- Environmental management guidelines 'Environmental Management in the Extractive Industry' (EPA, 2006) will be implemented during the construction phase.

Wastewater:

- Use of self-contained port-a-loos with integrated waste holding tanks, removed after use with waste discharged at a suitable off-site treatment location,
- No water or wastewater will be sourced or discharged on or to the site.

Morphological changes to surface water courses:

- Man made drains will be rerouted around wind farm infrastructure or integrated into the drainage design. Those that are deeply incised will be culverted where road crossings are proposed,
- No in-stream excavation works are proposed. New and upgraded crossings will be clear span or box culvert crossings and existing banks will remain undisturbed, with installation by crane and no contact with watercourse,
- All OPW and IFI guidance will be integrated into the design,
- Drainage will be installed in advance. Plant and equipment will not be permitted to track across watercourse.
- Works will be planned during July to September in accordance with IFI guidance
- Where works are necessary within the 50m buffer zone, double row silt fences will be installed as described above.
- All new crossings will require a Section 50 application (Arterial Drainage Act, 1945) and will be designed in accordance with the application consent guidelines.

- Temporary advance drainage measures including use of check dams, silt traps and double silt fence perimeter,
- No stock piling of materials in constraint zones, no refuelling or overnight parking of machinery,
- No concrete truck chute cleaning and no works during heavy rain,
- No instream works proposed, excess construction material immediately removed to licensed facility,
- Spill kits available
- Silt fencing erected on sloping ground towards watercourses,
- Additional mitigation measures for HDD drilling as described in Section 9.5.2.13 of the EIAR and including bunding of the area around the bentonite batching, pumping and recycling plant using terram and sandbags, drilling fluids retained within a sealed tank/sump to prevent migration (from works area) and a 'Fracture Blow-out (Frac-out) Prevention and Contingency Plan.

Use of the Siltbuster

- Electronic in-line controls prevent overdosing. Monitoring and water analysis of pre and post treated water controls the correct chemical addition.
- Dosing rates to initiate sediment are small and the vast majority is removed in the deposited sediment. Final effluent not meeting discharge criteria is recycled and retreated.
- Use of biodegradable chemical agents at very sensitive sites.

Karst Bedrock & Karst Features

- Measures as set out above for hydrocarbons, cement-based products and wastewater.

Downstream Surface Water Abstractions

- Measures as set out above for hydrocarbons, cement-based products, HDD, surface water crossings and wastewater.

Hydrologically Connected Designated Sites

- Measures as set out above for tree felling, construction/earthworks, hydrocarbons, cement-based products, surface water crossings and wastewater.

Surface Water and Groundwater WFD

- Measures as set out above for tree felling, construction/earthworks, hydrocarbons, cement-based products, surface water crossings, wastewater and groundwater.

Proposed Grid Connection Route

- The majority of the proposed GCR is in excess of 50m from any watercourse with the exception of existing watercourse crossings. All of the crossings are existing bridges, pipes and culverts along the public road and no in-stream works are required. However, there is potential for effects during trench excavation work and associated mitigation measures are set out above under 'morphological changes'.

18.192. Residual Effects

18.193. With the implementation of mitigation measures the EIAR predicts that there will be no significant direct or indirect negative effects on water at construction stage, operational or decommissioning stage. Effects are assessed as ranging from no effect to neutral indirect long-term effects and with most assessed as negative, imperceptible, indirect/direct, temporary/short-term/long-term, likely and unlikely effects. At construction stage the use of the 'siltbuster' systems is assessed as having a significant positive effect on protected surface water quality.

18.194. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.195. I have examined, analysed and evaluated Chapter 9 of the EIAR, all of the associated documentation and observations on file in respect of water. I am satisfied that the key impacts in respect of the likely effects on water as a consequence of the development have been identified. Parties to the appeal raise a number of issues in respect of air quality and climate which I address below.

18.196. Effects on downstream Natura 2000 sites

18.197. The PA, together with Parties to the appeal, noted the hydrological connectivity of the site to downstream Natura 2000 sites with water-dependent habitats and species sensitive to water quality. Potential pollution impacts arising mainly from sediment laden discharges to surface waters and release

of hydrocarbons were raised. These potential effects are assessed in the Stage 1 AA Screening (Appendix 1) and Stage 2 AA (Appendix 2) appended to this report. In screening the need for Appropriate Assessment, I determined that the proposed development could result in significant effects on Lough Derg (Shannon) SPA, River Shannon and River Fergus Estuaries SPA, Glenomra Woods SAC and the Lower River Shannon SAC in view of the conservation objectives of those sites and that Appropriate Assessment was required. For the reasons set out in my Stage 2 AA (Appendix 2) I subsequently determined that adverse effects on site integrity of the Lough Derg (Shannon) SPA, River Shannon and River Fergus Estuaries SPA, Glenomra Woods SAC AND Lower River Shannon SAC can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

18.198. Water Framework Directive (WFD)

18.199. Under the WFD the Board is obliged to ensure that development will not result in the deterioration in status of surface or groundwaters, support the restoration of surface and groundwater to good status, protect and enhance the status of artificial or heavily modified bodies and achieve compliance with the standards and requirements for designated protected areas.

18.200. A WFD Compliance Assessment is set out in Appendix 9-3 of the EIAR, and I note that the local groundwater bodies which underlie the windfarm site, temporary blade transition area and GCR all achieved 'good' status in the 3 no. WFD cycles (2010-2015, 2013-2018 and 2016-2021) and are 'not at risk' of failing to meet their respective WFD objectives and no significant pressures have been identified. As set out in the baseline information a total of 5 no. SWBs downstream of the proposed windfarm site in the Shannon Estuary North surface water catchment have been deemed to be at 'risk' of failing to meet their respective WFD objectives (*Broadford _010, _020 7 _030 river waterbodies, Castle Lake waterbody and the Upper Shannon Estuary Transitional waterbody*), and a total of 3 no. river waterbodies downstream of the proposed windfarm in the Lower Shannon

surface water catchment have been deemed to be 'at risk' of failing to meet their WFD objectives (*Ardcloony_010, Blackwater (Clare)_020 and the Shannon (Lower)_050 SWBs*). The WFD Compliance Assessment concludes that with mitigation measures in place for the protection of surface water during the construction, operation and decommissioning phase of the proposed development, the qualitative and quantitative status of all receiving waterbodies will not be altered by the proposed development.

18.201. The assessment of potential effects on water in this section of my report also determined that post-mitigation: there is no direct discharge to downstream receiving waters and the qualitative status of the receiving SWBs will not be altered by the project; and there is no direct discharge to groundwaters and the qualitative status of the receiving GWBs will not be altered by the project.

18.202. This is also consistent with the conclusions of the Stage 2 AA (Appendix 2) in respect of the integrity of downstream Natura 2000 sites which are hydrologically connected to the subject site and contain water sensitive habitats and species. The conclusion of the Stage 2 AA that adverse effects arising from the proposed development can be excluded for the (downstream) River Shannon SAC and the River Shannon and River Fergus Estuaries SPA, provides further reassurance and confirmation that the proposed development will not result in adverse effects on water quality (surface or ground), will not jeopardise the WFD objectives and that the project is compliant with the requirements of the WFD (2000/60/EC).

18.203. PAs Second Reason for Refusal

18.204. The PAs second reason for refusal is largely predicated on an interpretation that the applicant's conclusions of no effects on downstream Natura 2000 sites and water quality in the NIS and WFD assessment is based on the hydraulic buffer and dilution effect of Doon Lough and Lough Derg to mitigate impacts. The PA does not accept the premise of this position as a basis to exclude impacts or effects and therefore determined that 'doubt' remained in the AA process and recommended that planning permission be

refused. Otherwise, the PA appears to be satisfied in its EIA that there is no direct discharge to downstream receiving waters or groundwaters and that the qualitative status of surface and ground waters will not be altered by the proposal.

18.205. In response the applicant states that the PA's interpretation is incorrect and indicates a significant misunderstanding of the cumulative hydrological assessment as presented in Section 9.5.7. of the EIAR. In simple terms the applicant points out that the WFD Compliance Assessment and the cumulative hydrological impact assessment do not suggest in anyway that Doon Lough or Lough Derg will be impacted by the proposed development or that they act as a buffer to downstream impacts. Rather the position is that with the implementation of the extensive mitigation measures set out for the protection of water quality and quantity there will be no significant effect on any watercourse or waterbody in the vicinity or downstream of the project development site including Doon Lough or Lough Derg.

18.206. I am satisfied that the PA is incorrect in its assessment of this issue. There is a complete absence of impacts or effects on Doon Lough or Lough Derg in the NIS, WFD and EIAR Chapter 9 of this application (post mitigation) which would support the position of the PA, and the PA has otherwise not pointed to or established such effects. I am satisfied having regard to the assessment set out above, and in particular the conclusions of the WFD assessment and the Stage 2 AA (Appendix 2) to this report that the detailed mitigation measures set out establish that reasonable scientific doubt does not remain and that it can be concluded that the proposed development will not adversely affect the integrity of downstream European Sites. Accordingly, I consider that the PAs second refusal reason is not sustained, and the proposed development will not be contrary to Objective CDP 15.3 of the CCDP.

Disruption of groundwater flow regimes

18.207. Some parties to the appeal raised concerns that the proposed development would disrupt groundwater flow regimes with potential

implications for dewatering and groundwater wells. The EIAR assesses the hydrology of the windfarm site to be dominated by surface water runoff. I note that the ground water vulnerability at the site is mapped by GSI as 'High' to 'Extreme' due to the thin coverage of peat/soils but that the EIAR finds that due to the low permeability of the underlying bedrock aquifer, groundwater flow paths are short with recharge emerging close by and discharging into local surface water streams meaning there is low potential for groundwater dispersion and movement within the aquifer and that surface water drains, streams and rivers are more vulnerable to contamination from human activities. The EIAR concludes that no effects will occur to groundwater levels or quantity due to the elevated nature of the windfarm site and I am satisfied having regard to the baseline conditions of the site, the assessment of potential effects set out and the mitigations measures set out within the CEMP that this position is reasonable.

18.208. Conclusion: Direct and Indirect Effects (Water)

18.209. Having regard to my examination of the environmental information in respect of water and to the conclusions of the Stage 2 AA (Appendix 2) to this report, it is considered that subject to implementation of the full suite of mitigation measures, no significant adverse effects will arise.

18.210. Air Quality and Climate

18.211. Issues raised in the observations relate to air borne pollution and the Air Quality Directive, particulate matter from diesel engines, leakage of SF6 gas (from turbines), reliability and dependability of green energy, carbon footprint of the development, failure to address emissions related impacts associated with transfer of waste and consumption of energy by Data Centres with no community or green dividend. Air Quality and Climate considerations were not a reason for refusal and the PA concluded that the assessment of climate issues was generally acceptable but noted that the potential impacts of SF6 insulation gas was not referenced and that an assessment of the carbon

footprint and embodied carbon of in-situ turbine foundations in the decommissioning phase should been undertaken.

18.212. Examination of the EIAR

Context

18.213. Chapter 10 of the EIAR deals with Air Quality. The assessment is carried out in accordance with the EIA Directive 2011/92/EU as amended by Directive 2014/52/EU and with regard to the guidance listed in Section 10.1.3 including air quality, resource and waste management, dust and particulate matter. A statement of authority is included. Specifically, the applicant refers to the various limit values and assessment thresholds set out in the Clean Air for Europe (CAFÉ) Directive (Directive 2008/50/EC) and to the recently implemented Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022) which are aligned to the CAFÉ Directive. The Clean Air Strategy for Ireland 2023 is also referenced, together with CAP 24 and the European Green Deal to deliver net-zero greenhouse gas emissions by 2050 and reduce GHG emissions to at least 55% by 2030.

18.214. Chapter 11 of the EIAR deals with Climate. The assessment is carried out in accordance with the EIA Directive as amended by Directive 2014/52/EU and has been prepared in accordance with a range of climate change and carbon savings guidance and assessment tools as listed in Section 11.1.2. A statement of authority is included.

Associated Figures and Appendices are:

- Appendix 11-1 Carbon Calculations.

Baseline

18.215. Due to the non-industrial nature of the proposed development and the general character of the surrounding environment, air quality sampling was deemed unnecessary and the EIAR works on the expectation that air quality in the existing environment is good, since there are no major sources of pollution. The EIAR refers to the EPA report '*Air Quality in Ireland*', 2022 (published in Sept. 2023) which reports that fine particulate matter (PM 2.5)

from solid fuel combustion and nitrogen oxide (NO₂) from vehicle emissions are the main pollutants affecting people's health and the health of the environment. Further EEA⁵⁸, EPA⁵⁹ and OEERE⁶⁰ reports are referenced which evidence the negative effects of pollution on human health with the most problematic pollutants being particulate matter, nitrogen oxides and ozone.

The methodology used in the assessment, is based on a precautionary approach and the maximum potential footprint for all of the infrastructural elements. The air quality zone for the site was selected following EPA collected baseline air quality data for Sulphur Dioxide (SO₂), Particulate Matter (PM₁₀), Nitrogen Dioxide (NO₂), Carbon Monoxide (CO) and Ozone (O₃) to determine representative levels of such emissions. The EPA has designated four air quality zones for Ireland, with the project site within Zone D 'Rural Ireland'. The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2024) was considered in the dust impact assessment specifically with regard to description of magnitude of activities and defining sensitivities and risk of impacts. The EPA air monitoring station reports published in September 2023 included concentrations for SO₂, PM₁₀, NO₂ and O₃ in Zone D. For SO₂ there were no exceedances of the daily limit values for the protection of human health (22.8 ug/m³) and the EIAR expects that values at the project site would be similar or lower than those recorded in EPA monitoring for Zone D. For PM₁₀ the daily limit of 50 ug/m³ for the protection of human health was exceeded on 40 days, with the greatest exceedance (10 days) at the Edenderry monitoring station. The EIAR notes that the breaches in particulate matter mainly comes from the burning of solid fuel such as coal, peat and wood, and expects that values at the project site would be similar or lower than those recorded in EPA monitoring for Zone D. For NO₂ it is noted

⁵⁸ European Environmental Agency 'Air Quality in Europe' (2022)

⁵⁹ Irelands Environment – An Integrated Assessment (2020)

⁶⁰ Office of Energy, Efficiency and Renewable Energy in the United States 'How wind can help us breathe easier' (2023)

that the annual value was below the annual mean limit for the protection of human health, but that there were lower and upper assessment threshold exceedances, but that the 18 days limit was not exceeded, and the average hourly max was below the max threshold (87.2 ug/m³). Based on professional judgement the EIAR expects that values at the project site would be similar or lower than those recorded in EPA monitoring for Zone D. For CO the EIAR notes that there were no exceedances of the 10mg limit set out in Directive 2000/69/EC or 2008/50/EC and expects that values at the project site would be similar or lower than those recorded in EPA monitoring for Zone D. For O₃ it is noted that there were 17 no. exceedances of the maximum daily eight hour mean limit of 120 ug/m³. The CAFÉ Directive states that this limit should not be exceeded on more than 25 days per calendar year and the EIAR expects that values at the project site would be similar or lower than those recorded in EPA monitoring for Zone D. For dust the EIAR states that there is no statutory limit in Ireland. It is noted that the EPA guidance suggests that a deposition of 10 mg/m²/hour can be considered a soiling nuisance (this equates to 240mg/m²/day) with a maximum daily deposition level of 350mg/m²/day recommended. Tables 10-11 to 10-15 of EIAR Chapter 10 refer. Sensitive receptors were derived from a constraint's identification and mapping process, and these are detailed in Fig.10-2 and summarised in the table below:

Table AC1: Summary of sensitive receptors and distance from dust emission source(s)

Distance from Emission Source (dust)	Number of Sensitive Properties
Within 20m of the proposed windfarm site	12 no. of which 3 no. are involved properties (H004, H014 & H026).
Within 20m of the proposed GCR	94 no.
Within 50m of the proposed windfarm site	2 no.
Within 50m of the proposed GCR	49 no.
Within 100m of the proposed windfarm site	6 no.
Within 100m of the proposed GCR	44 no.

Within 250m of the proposed windfarm site	4 no.
Within 250m of the proposed GCR	109 no.

According to the IAQM dust deposition can occur for a distance of 350m from work areas, but most occurs within the first 50m.

18.216. The applicant references the EEA⁶¹ '*European Climate Risk Assessment*' published in March 2024 which states that Europe is the fastest warming continent on the planet, and is warming at twice the global rate and the IPCC⁶² report which states that moving away from our reliance on fossil fuel-driven power plants is essential to reduce emissions of greenhouse gases and combat climate change. The applicant notes that the programme for government is committed to reducing greenhouse gases by an average of 7% per annum over the next decade to achieve net zero emissions, a climate resilient and climate neutral economy by the year 2050. The first national carbon budget programme proposed by the CCAC⁶³ and adopted by Government comprises three successive 5-year carbon budgets, with Ireland having already expended 47% of its emissions in the first two years of the first budget period and requiring a 12.4% reduction in emission each year to stay in budget. Sectoral Emissions Ceilings were launched in 2022, and the electricity sector has been set one of the smallest sectoral emission ceilings and the steepest decline in emissions of all sectors equating to a headline target of a 75% reduction in emissions in the sector from 2018 levels by 2030. This will be achieved by increasing the share of renewable energy to 80% encompassing 9GW of onshore wind capacity. The EPA Emission Projections Updates for Ireland predicts it is not on track to meet its emissions reduction target by 2030, with sectoral emissions ceilings for 2025 and 2030 projected to be exceeded in most cases including for electricity.

⁶¹ European Environment Agency

⁶² Intergovernmental Panel on Climate Change 'AR6 Synthesis Report: Climate Change 2023'.

⁶³ Climate Change Advisory Council

18.217. The EIAR uses an updated version of the methodology '*Calculating Carbon Savings from Wind Farms on Scottish Peat Lands*'⁶⁴ to demonstrate that the windfarm will save more CO₂ that will be released. The methodology is explained in Section 11.5.2 with the results of the web-based carbon calculator included in Appendix 11-1. The full life cycle and embodied carbon of the proposed wind farm turbines have also been taken into account using the TII Carbon Tool (TII 2022). The main CO₂ losses due to the proposed project are summarised in Table 11-6 and total expected losses of 82,145 tonnes (to a maximum of 92,799) over its 35-year life, of which 30,894 tonnes is accounted for by the wind turbines directly. Losses from soil organic matter (i.e. CO₂ loss from removed and drained peat) will equate to 1,466 tonnes and losses due to embodied carbon accounts for 3,450 tonnes. The values set out are conservative and assume no habitat enhancement or afforestation activities will take place as a part of the project nor that forestry felled will be replanted on a hectare-by-hectare basis and are otherwise based on the assumption that the hydrology of the project site and habitats are not restored on decommissioning of the project. Taking into account the BEMP (Appendix 6-4) and reforestation (13.8ha) that will take place, the removal of turbines, environmentally prudent and revegetation decisions set out in the Decommissioning Plan (Appendix 4-7), it is expected that the CO₂ losses will be lower than those projected. For the purposes of calculating carbon savings, the rated capacity of the proposed windfarm is assumed to be 46.2MW (based on 7no. 6.6MW turbines), with a load factor of 35% used for the project. The calculation for carbon savings is 32,656 tonnes per annum or 1,139,775 tonnes of CO₂ displaced from traditional carbon-based electricity generation over the lifetime of the project with the CO₂ lost to the atmosphere due to the project offset within approx. 30 months of operation.

Potential Effects

18.218. The EIAR identifies the potential for a range of environmental effects on air quality and climate. The likely significant effects (potential direct, indirect

⁶⁴ University of Aberdeen and the Macauley Institute, Science Policy and Co-ordination Division

and cumulative) as identified in the EIAR, are summarised in Table AC2 below:

Table AC2: Summary of potential effects (*Air Quality and Climate*)

Project Phase	Potential Effects
Do Nothing	Air Quality & Climate Air Quality would likely remain similar to the current Zone D status. However, the opportunity to reduce emissions of carbon dioxide, oxides of nitrogen and sulphur dioxide to the atmosphere would be lost resulting in an indirect negative impact on air quality nationally, regionally and locally. The opportunity to capture part of Clare's valuable wind energy resource would be lost together with the opportunity to contribute to the Government and EU targets for renewable energy and a reduction in greenhouse gas emissions.
Construction Phase	Air Quality <i>Exhaust Emissions</i> - Exhaust emissions from construction and transport vehicles will result in NO₂, Benzene and PM₁₀. The potential effect will not be significant and will be restricted to the duration of the construction phase and localised to work areas. This is assessed as a short-term slight negative effect. - Construction machinery required for construction of the GCR will give rise to exhaust emissions. This is assessed as a short-term, slight, negative effect. - The transport of turbines and construction materials, waste and workers will also give rise to exhaust emissions from transport vehicles. This is assessed as a short-term moderate negative effect in terms of air quality. <i>Dust Emissions</i> <i>Project Infrastructure</i> - There are 12 sensitive properties within 20m of the proposed windfarm site and 94 sensitive properties within 20m of the proposed GCR and there are 2 sensitive properties within 50m of the proposed windfarm site and 49 within 50m of the proposed GCR. All sensitive properties for the 20m, 50, 100m and 250m dust deposition band are mapped on Fig. 10-12. The overall sensitivity of the area to dust soiling impacts (as per IAQM) is assessed as medium and the impact from dust emissions is assessed as a short-term slight negative effect. - The overall sensitivity of the area to human health effects of PM₁₀ is considered to be low (as per IAQM). - The overall sensitivity of the area to ecological impacts is considered high, therefore the potential effects on ecological receptors from the construction phase is assessed as a short-term, moderate effect. - The overall risk of dust emission impacts (in the absence of mitigation) for the major dust generating activities during the

	construction phase is assessed as medium and the potential effects are assessed as a short-term moderate effect. <i>Transport</i> - Excavation works associated with temporary accommodation works at O'Briensbridge, Co. Clare will give rise to localised dust emissions. There is 1 no. dwelling 50m from this site. These works are considered to be short-term and will have a slight negative effect. - The transport of materials and waste to and from the site will give rise to localised dust emissions during dry weather. This is assessed as a short-term slight negative effect. Climate <i>Greenhouse Gas Emissions</i> <i>Proposed Project</i> - Greenhouse gas emissions will arise as a result of removal and reinstatement of peat, tree felling and planting, production of construction materials and operation of vehicles. The impact is assessed as short-term and slight. - Some potential long-term slight negative effects will occur due to the removal of carbon fixing vegetation and habitat. This is assessed as long-term and slight. <i>Transport</i> - The transport of turbines and construction materials to the site will give rise to greenhouse gas emissions associated with vehicles and exhaust emissions. This is assessed as short-term and slight. <i>Waste</i> - Construction waste will arise mainly from excavation and unavoidable construction waste including material surpluses, damaged materials and packaging waste. This is assessed as short-term and slight.
Operational Phase	Air Quality <i>Exhaust Emissions</i> - It is considered that staff, LGV and recreational traffic in the operational phase will result in imperceptible impacts. - The addition of an LGV to the area (1-2 times per day) and several HGVs on occasion over the 35-year lifetime of the project will give rise to a long-term imperceptible negative effect on air quality. <i>Dust Emissions</i> - The dust emissions associated with the light LGV traffic and occasional HGV traffic in the operational phase is assessed as a long-term imperceptible negative impact on air quality. <i>Air Quality</i> - There will be no net carbon dioxide (CO₂) emissions from the operation of the project. There will be savings of CO₂, oxides of Nitrogen (NO_x) and Sulphur Dioxide (SO₂). The project will offset

	approx. 32,565 tonnes of CO_{2eq} per annum resulting in a long-term moderate positive effect on air quality. <i>Human Health</i> - Exposure to SO₂, NO_x, Pb, benzene and O₃ are thought to be harmful to human health. The production of clean renewable energy will offset the emission of these harmful chemicals by fossil fuel powered sources of electricity and therefore will have a long-term slight positive impact on human health. Climate <i>Greenhouse Gas Emissions</i> <i>Proposed Project</i> - Maintenance and monitoring activities, the removal of carbon fixing vegetation and habitat and peat reinstatement and drainage may result in the release of CO₂ to the atmosphere. This is assessed as long-term slight negative. - The proposed project will generate energy from a renewable resource, displacing approx. 32,565 tonnes of CO₂ per annum. This is assessed as a long-term significant positive impact on climate. <i>Transport</i> - Potential emissions from maintenance are as described above. <i>Waste</i> - Waste is not proposed to be generated at operational stage, any waste which is generated will be minimal and is assessed as short-term imperceptible.
Decommissioning Phase	Air Quality & Climate Similar to that which will occur at construction stage (above) only with lesser impact.
Cumulative and In-combination Effects	Air Quality & Climate The other plans and projects considered in the cumulative assessment are presented in Appendix 2-2, with a focus on relevant developments within 1km of the proposed windfarm site and proposed GCR for the assessment of air quality impacts. These developments are listed in Table 10-20 and 11-7. Additionally, forestry operations, road projects and the proposed Knockshavno, and permitted Carrownagown and Fahy Beg wind farms were also considered. Air Quality <i>Construction Phase</i> - Potential for cumulative impacts from emissions from construction plant and machinery and dust emissions associated with construction activities. <i>Operational Phase</i> - Exhaust and dust emissions will be minimal with no potential for measurable negative cumulative effects with other developments on air quality. <i>Decommissioning Phase</i> - Similar to construction phase but with less impact.

	Climate <i>Construction Phase</i> - Potential for cumulative impacts from greenhouse gas emissions associated with the production of construction materials and the operation of vehicles and plant. These will be restricted to the direction of the construction phase and a short-term duration. There are assessed as a permanent imperceptible negative effect on climate. <i>Operational Phase</i> - While there will be greenhouse gas emissions associated with construction of the project, this will take place under the Electricity sector emissions ceiling and will be offset by the operation of the project within its operational life. There will be no cumulative effects arising on climate. <i>Decommissioning Phase</i> - Similar to construction phase but with less impact.
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18.219. Mitigation

18.220. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter. Measures are extensive and in relation to Air Quality and Climate include:

- Standard vehicle maintenance measures and use of approved specified transport and haul routes.
- Standard best practice management of waste streams.
- Implementation of standard best practice dust suppression measures as set out in the CEMP (Appendix 4-3) and including wheel wash facilities and use of water bowsers.
- Minimisation of excavation and stock piling in accordance with the peat and spoil management plan.
- Aggregate materials obtained primarily from onsite borrow pit reducing journey distances, movements and emissions.
- Implementation of BEMP (Appendix 6-4)
- Afforestation of 13.8ha of felled forestry (as per Forest Service policy and felling licences for wind farm development) (Section 4.4.4.1. of EIAR Chapter 4 refers).

18.221. Residual Effects

18.222. With the implementation of mitigation measures the EIAR predicts that there will be no significant direct or indirect effects on air quality or climate at construction stage. At operational stage the EIAR predicts a long-term moderate positive effect on air quality and climate.

18.223. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.224. I have examined, analysed and evaluated Chapter 10 and 11 of the EIAR, all of the associated documentation and observations on file in respect of air quality and climate. I am satisfied that the key impacts in respect of the likely effects on air quality and climate as a consequence of the development have been identified. I am satisfied that by virtue of mitigation measures, the limited number of residential receptors within 250m of the windfarm site and the nature of the works associated with the proposed GCR that no significant effects will arise as a consequence of dust or other particulate emissions. I note that these effects are predicted as short-term slight or long-term imperceptible. The proposed development will give rise to an increase in greenhouse gas emissions during construction, however these will be significantly offset by the development within approx. 30 months of operation and the wind farm will make a substantial contribution to sectoral targets for the reduction of emissions over its lifetime. Parties to the appeal raise a number of issues in respect of air quality and climate which I address below.

18.225. SF6 Gas

18.226. The PA was concerned that the applicant had not referenced or considered the potential impacts of this insulation gas or the leakage of same. In response the applicant states that the release of hydrocarbons was adequately considered in the EIAR and particularly Chapters 6, 8 and 9. It is not clear that SF6 gas was specifically addressed. I note that this is a synthetic gas which is used in the electricity and distribution system as an insulant and that it is a potent GHG. I have examined Appendix 11-1 of the EIAR, and the factors considered in the calculation of the projects carbon footprint, and it is not explicitly clear that SF6 was considered. However, I

acknowledge that its use is common practice in the industry and that the risk associated with leakage is limited. I am satisfied given the margin of carbon savings projected over the lifetime of this project that the use of SF6 or any leakage which may occur will not be significant or such that would militate against the renewable energy merits of the project.

18.227. Transfer of waste and Embodied Carbon.

18.228. The PA, and observers to the appeal, were also concerned that emissions associated with the transfer of waste to and from the site, and embodied carbon in the turbine foundations, were not considered in the calculation of carbon losses and savings for the project. In response the applicant confirms, with references to the EIAR Chapter 11 and Appendix 4-7 and 11-1, that emissions from vehicle movements associated with transportation and embodied carbon associated with turbine foundations were fully considered as a part of carbon calculations and I am satisfied that this is the case. Indeed, I note the precautionary approach taken in the EIAR to the calculation of the carbon footprint of the project which considered the maximum potential footprint of all project infrastructure and did not factor in the BEMP, reforestation or Decommissioning Plan which will reduce the amount of CO₂ lost to the project.

18.229. Otherwise, I am satisfied that the applicant has presented a reasonable assessment of the likely net reduction in GHG emissions arising from the development and set out persuasive evidence as to the renewable energy credentials of the project having regard to the national and sectoral targets for a reduction in greenhouse gas emissions and the 'dialling up' of renewable energy including onshore wind.

18.230. Conclusion: Direct and Indirect Effects (*Air Quality & Climate*)

Having regard to my examination of the environmental information in respect of air quality and climate it is considered that subject to implementation of the full suite of mitigation measures, no significant adverse effects will arise. The development will have a long-term moderate positive effect on air quality and

climate with the net reduction in greenhouse gas emissions over the operational lifetime of the project.

18.231. Landscape & Visual

18.232. Issues Raised

18.233. Issues raised in respect of landscape and visual effects in the observations to the appeal relate to concerns that the turbines by reason of their elevated siting and height will constitute a prominent feature on the landscape from local and long range views and will injure the visual amenities of the area particularly from the R466 scenic route and that the turbines are simply 'too big', will be visually overbearing and result in spatial and visual dominance of the landscape in proximity to dwellings and urban nodes contrary to WEDG 2006. The first refusal reason of the PA also concerned landscape impacts, with the PA opining that the proposed windfarm was located in a more sensitive and scenic area of the Slieve Bernagh 'Bog' LCA and that the turbines by reason of height, scale and siting on an open, exposed and sensitive upland landscape would constitute a prominent feature from local and long range views and would seriously injure the amenities of the area negatively impacting the R466 scenic road.

18.234. Examination of the EIAR

Context

Chapter 13 of the EIAR deals with landscape and visual effects and includes the Landscape and Visual Impact Assessment (LVIA) of the project. It assesses the likely significant effects of the proposed project on landscape and visual amenity. The proposed turbines are deemed to be the 'essential' aspect of the development which will give rise to effects on the landscape and are therefore the primary focus of the LVIA, other ancillary elements are however given due consideration and assessment. A range of turbine dimensions are assessed as the Maximum (Scenario 1), Minimum (Scenario 2), Median (Scenario 3) and as described in Table 3.1 of EIAR Chapter 1.

Details of the guidance used to conduct the LVIA is outlined in Appendix 13-1 (LVIA Methodology). Two study areas were defined for the assessment: 20km LVIA study area of the assessment of effects on landscape and visual receptors, and a 15km study area for the assessment of effects on designated LCA's. Five broad topics were scoped out on the basis of desk studies and survey work and these include: receptors with minimal/no visibility of theoretical visibility (indicated by ZTC), general landscape receptors beyond 20km, visual receptors beyond 20km, designated LCA's beyond 15km and cumulative effects beyond 20km with the full justification set out in Section 1.4 of Appendix 13-1. The LVIA considers landscape and visual '*sensitivity*' balanced with the '*magnitude of change*' to determine the likely significance of effects. The Zone of Theoretical Visibility (ZTV) extends to 20km as per the LVIA study area which is in accordance with WEDG 2006 and dWEDG 2019 for tip heights >100m. A Route Screening Analysis (RSA) was also carried out within a 5km radius of the proposed turbines and on major roads extending to the town of Killaloe 6km to the east. A statement of authority has been included.

Associated appendices are:

- EIAR Volume 2: Photomontage Booklet
- Appendix 13-1: LVIA Methodology
- Appendix 13-2: LCA Assessment Tables
- Appendix 13-3: Photomontage Visual Assessment Tables
- Appendix 13-4: A0 LVIA Baseline Map
- Appendix 13-5: Photowire Visualisation Booklet.

Baseline

Landscape

18.235. The CCDP and the CWES were consulted to identify general landscape designations within the LVIA study area. The ZTV Map also demonstrated that Counties Limerick and Tipperary are located within the LVIA study area and therefore the Limerick Development Plan, 2022-2028 (LDP), Tipperary County Development Plan (TCDP) and the TCDP Vol.3:

Landscape Character Assessment and Schedule of Views and Routes were also consulted. The LVIA identified the following designations which (with the exception of LCAs) are mapped in Fig 13-4 and overlain with the ZTV in Fig 13-5:

- 15 no. designated scenic routes (all three counties) and 1 no. designated scenic view (TCDP);
- 1 no. primary and 1 no. secondary protected scenic amenity area (TCDP);
- Multiple boundaries in Co. Clare designated 'Strategic Area', 'Acceptable in Principle' and 'Open to Consideration' for wind energy development (CWES);
- Multiple boundaries in Co. Clare designated 'Heritage Landscapes' of higher sensitivity, 'Working' and 'Settled Landscapes' (CCDP); and
- 14 no. designated LCAs (all three counties).

18.236. Co. Clare is divided into 21 LCAs and of these 8 no. are within 15km LCA study area. All of the proposed turbines are located within LCA-8: Slieve Bernagh Uplands which is designated as being '*appropriate*' for '*large*' windfarms (defined as 11-20 turbines) with '*medium to low*' sensitivity to windfarm development in the CWES. There are two parts of this LCA that are considered highly sensitive, the foothills and mountains overlooking Lough Derg and the unenclosed bogs of Lackareagh and Glengalliagh Mountain. The LVIA indicates no theoretical visibility from the mountains on the western edge of Lough Derg and the ZTV indicates low to partial theoretical visibility from the eastern shore of Lough Derg. The windfarm is otherwise not located in unenclosed bogs. Co. Clare is also divided into three broad categories of '*Living Landscapes*' which are: '*Heritage*', '*Settled*' and '*Working*' as designated in the CCDP, with '*Heritage*' having the highest sensitivity. All heritage landscapes are scoped out of further assessment in the LVIA on the basis of little to no, almost entirely no, or no theoretical visibility of the proposed turbines. The proposed development is located within a designated '*settled landscape*' for which one of the envisaged uses in the CCDP is '*energy*' and a designated '*working landscape*' otherwise stretches along the southwestern part of the LVIA study area. Within the LVIA study area there

are 9 no. designated scenic routes in Co. Clare, and these are mapped in Fig. 13-5 and listed in Table 13-3.

- 18.237. A total of 8 no. protected views including one scenic route in Co. Limerick and one scenic viewpoint and 6 no. scenic views in Co. Tipperary are identified within the LVIA study area, these are mapped in Fig. 13-5 and listed in Table 13-4. One designated primary amenity area in Co. Tipperary (along the southern banks of Loug Derg) is included in the LVIA for assessment given the higher sensitivity of this area. Viewpoint VP01 and photowire PW-1 & PW-B refer. The LVIA otherwise includes a comprehensive assessment of multiple representative viewpoints from Limerick City and 4 no. LCAs within Co. Tipperary which are within the LVIA study area and which are listed in Section 13.4.1.2.3.

Landscape Character

- 18.238. The landform of the proposed windfarm site is described as undulating and relatively steep upland terrain comprising the ridgetops of Glengalliagh Mt and Lackareagh Mt of the Slieve Bernagh Range in east Clare and within the spatial enclosure of the Glenomra Valley. T01 and T02 are situated on the eastern flank of Glengalliagh Mt in the northern portion of the site and within low-intensity agricultural lands at mid-elevations relative to the Glenomra Valley Floor. The remaining 5 no. turbines are situated at higher elevations with T03, T04 and T05 spanning the eastern side of the ridge between Glengalliagh Mt and Lackareagh Mt within coniferous forestry, and T06 and T07 below the western ridge again in low-intensity agricultural land. The proposed onsite 38kv substation compound and BESS is located in the centre of the proposed windfarm and in the saddle between the peaks of Glengalliagh Mt and Lackareagh Mt and given its elevation is assessed as having potential for visual impact from receptors in Glenomra Valley. The East Clare Way (ECW) is a national walking route, 180km in range, which passes through the site directly between the turbines over a distance of 2.3km on the local road L7080 (Gap Road). T04 is the closest turbine to the route 150m to the north, with T05 and T06 250m and 230m to the south respectively with Fig

13-9 showing an aerial view of the ECW and proximity to the proposed turbines. The proposed GCR follows the local road network through a rural landscape characterised by agricultural lands and comes in proximity to residential receptors near Ardnacrusha 110kV substation. Landscape Value and Susceptibility to change was assessed against seven indicators (criteria) set out in Table 13-5 to determine the landscape sensitivity of the site. The LVIA determined the sensitivity of the proposed windfarm site to be 'low' as it is highly modified by agriculture and forestry, non-signage of archaeological and recreational sites, its degree of degradation and directed wider landscape views away from the site.

18.239. The LVIA selects the '*Transitional Marginal Landscape*' character type, as best representative of the landscape within which the proposed turbines are located as defined in WEDG 2006 and dWEDG 2019. The siting and design guidance of the WEDGs in relation to this landscape character type are then discussed in respect of location, spatial extent, spacing layout, height and cumulative effect. In terms of location the turbines are sited at or near peaks and maintain the appropriate set back distance from residential receptors of a min. 500m (WEDG, 2006) and the increased set back of 4 x times the tip height (720m), (dWEDG 2019). In relation to spatial extent, it is accepted that there is some visual disconnection between the northern two turbines T01 and T02 and the remaining 5 no. more southerly turbines. In terms of spacing, it is considered that the turbines respond appropriately to the landcover of the site in their semi-clustered norther and southern groupings. In terms of layout, a staggered layout at the base and over the ridge top(s) is proposed and that the height is scaled as tall vertical elements within the landscape in accordance with guidance. Cumulative effects are considered with other existing, permitted and proposed windfarms. The character of the wider setting and surrounding settlements is also noted and described.

18.240. A total of 14no. LCAs were identified in Counties Clare, Limerick and Tipperary within the 15km LCA study area. These are listed in Section 13.4.5.2.1, mapped in Fig 13-10 & 13-11 and scoped in or out in a preliminary

assessment set out in Table 13-6. The 6 no. LCAs which are scoped in for further assessment are detailed in Table 13-7.

Visual

- 18.241. The visual baseline uses ZTV mapping and on-site visibility appraisals to identify key visual receptors for assessment, which are represented by 'viewpoints' (VP). The LVIA identifies 17no. designated scenic routes and/or views within the LVIA study area, and those scoped in (4 no.) are detailed in Table 13-9. One OSi viewing area (*of 6 no. within the LVIA*) is scoped in as detailed in Table 13-10. The 7 no. settlements within the LVIA study area which were scoped in for VP selection are identified in Table 13-11 and this was based on consideration of settlement strategies, hierarchy and the core strategies of the respect CDPs in addition to visibility. The recreational routes (*waymarked walking routes, cycle routes, scenic drives and tourist routes inc. WAW*) and the recreational, cultural heritage & tourist destinations scoped in are detailed in Table 13-12 and Table 13-3 respectively. King John's Castle, Limerick City is the only cultural heritage/tourist destination scoped in. National roads and motorways are considered to 20km, 5km in the case of regional roads and 3km for local roads, with those scoped in detailed Table 13-14 based on ZTV mapping and the RSA. The final list of visual receptors selected for assessment in the LVIA are listed in Table 13-15 with the representative viewpoint (VP) or photowire (PW) also indicated.
- 18.242. Surveys conducted during 2022, 2023 and 2024 together with visibility appraisals determined that most visibility of the proposed turbines will occur within 5km of the proposed turbines, and inside the Glenomra Valley. Whilst the area is sparsely populated, it is a settled landscape, and housing is organised along local road networks as well as in small settlement clusters at crossroads and junctions. It is acknowledged that some residential receptors are located in proximity to the site and will have views with the greatest visual effects. The following representative VPs and PWs located in proximity to residential receptors and settlement centres within 5km were selected for assessment:

- VP05: Broadford, Village at the north-west end of Glenomra Valley;
- VP08: Bridgetown, Village at the south-east end of Glenomra Valley;
- VP13: Killeagy, general area of individual residences within EIAR site boundary;
- VP14, PW – I, J & K: Kilnace, small village within EIAR site boundary; and
- VP15, PW-H: Aillemore, residences in River Ardcloony Valley immediately east of and outside Glenomra Valley.

18.243. All existing, permitted and proposed wind farm developments within the 20km LVIA study area were considered in the assessment of cumulative and in-combination landscape and visual effects. These are listed in Table 13-16. Figure 13-18 then compares the cumulative theoretical visibility of all existing, permitted, under construction and proposed windfarms and Fig. 13-19 shows the same map overlain with a newly calculated ZTV for cumulative effects. It is opined that the proposed development itself adds very little additional theoretical visibility of cumulative turbines across the landscape of the LVIA study area which suggest that the project will add to the number of turbines potentially visible in a future receiving environment but will introduce minimal novel elements into landscape views.

Potential Effects

18.244. The EIAR identifies the potential for a range of landscape and visual environmental effects. The landscape and visual baseline information is combined with consideration of cumulative effects to report the landscape and visual effects likely to occur. Appendix 13-3 assesses the likely difference of effects arising from the proposed turbine range and concludes that the outcome of the significance of residual landscape and visual effects on receptors will not change irrespective of turbine model implemented. The likely significant effects (potential direct, indirect and cumulative) as identified in the EIAR, are summarised in Table LV1 below:

Table LV1: summary of potential effects (landscape and visual)

Project Phase	Potential Effects
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Do Nothing	A scenario largely consistent with the baseline would continue, with no changes to land-use practices. It is considered likely that there would be other future interest in developing this landscape for wind energy. Characteristic commercial forestry operations would continue, with a neutral impact in the context of EIAR.
Construction Phase	<i>Landscape Effects</i> <i>Proposed Windfarm</i> - Associated earthworks, such as the cut and fill required will have the greatest potential for landscape effects. Construction activities may cause temporary impacts such the creation of temporary structures, dust, minor soil erosion and minor alterations to drainage. These impacts are assessed as slight, short-term, negative in terms of landscape effects. <i>Proposed GCR</i> - The proposed GCR is to be located underground and the construction phase will be temporary, localised and transient causing temporary changes to the physical landscape along the route which will not affect the character of the landscape setting or visual amenity of the area. The impacts are assessed as slight, short-term, negative in terms of landscape and visual effects. <i>Visual Effects</i> <i>Proposed Windfarm</i> - The most substantial visual effects will arise from turbine assembly, including temporary scenarios where partially constructed turbines may be seen as standalone tower sections including with equipment and vehicles such as large cranes. This is assessed as slight, short-term negative visual effects. - Temporary minor accommodation works maybe necessary associated with the proposed TDR. The landscape value and sensitivity of these works is deemed 'low' and changes will be highly localised. This is assessed as a slight, short-term, negative visual effect. - The access roads and hardstands for turbines T01, 02, 06 and 07 are located on lower lying low-intensity agricultural lands with greater exposure within the Glenomra Valley and visual effects will be experienced by local residents to the west. This is assessed as slight, short-term and negative visual effects. - The impacts associated with the construction of the 36.5m met mast are considered to be highly localised and are assessed as slight, short-term and negative visual effects. - The earthworks and construction activities required to construct the onsite substation, and BESS will cause a substantial localised change to views in the immediate area. During the construction phase the substation will be temporarily visible with the impact considered to be localised and assessed as a slight, short-term, negative visual effect. <i>Proposed GCR</i> As described above for landscape effects.

Operational Phase	<i>Landscape Effects</i> <i>Proposed Windfarm</i> - The landscape character of the proposed windfarm will undergo an inherent change with the introduction of vertical manmade structures and ancillary infrastructure. The sensitivity of the landscape was deemed to be 'low', the magnitude of change will be greater for highly localised areas, lesser for the wider area, and is assessed as 'slight'. Low sensitivity with slight change amounts to long-term landscape effects which are not significant. <i>Proposed GCR</i> - Landscape and visual effects during the operational phase will be imperceptible. <i>LCA Assessment Outcomes</i> - C-LCA-8: Slieve Bernagh Uplands. Low sensitivity, moderate magnitude of change, slight effect. - C-LCA-9: River Shannon Farmland. Medium sensitivity, negligible magnitude of change, not significant effect. - C-LCA-11: East Clare Loughlands. Medium sensitivity, negligible magnitude of change, not significant effect. - L-LCA-06: Shannon Coastal Zone. Medium sensitivity, negligible magnitude of change, not significant effect. - T-LCA-12: River Shannon – Newport. Medium sensitivity, negligible magnitude of change, not significant effect. - T-LCA-13: Arra Mountains – Lower Lough Derg. Low sensitivity, negligible magnitude of change, imperceptible effect. <i>Visual Effects</i> <i>Photomontage Viewpoint Assessment Outcomes (Table 12-18 refers)</i> - VP01 Tountinna Mt, Lough Derg. Very high sensitivity, slight magnitude of change, moderate effect. - VP02 Killaloe, Riverside. High sensitivity, negligible magnitude of change, not significant effect. - VP03 The Gap Road at Ballygarreen. Medium sensitivity, moderate magnitude of change, moderate effect. - VP04 R466/Scenic Route 26, Cloonyconry More. High sensitivity, substantial magnitude of change, significant effect. - VP05 Broadford. Medium sensitivity, slight magnitude of change, not significant effect. - VP06 R465 near Formoyle More. Medium sensitivity, slight magnitude of change, slight effect. - VP07 R466/Scenic Route 26, Ballyquinn Beg. High sensitivity, moderate magnitude of change, moderate effect. - VP08 Bridgetown. Medium sensitivity, negligible magnitude of change, not significant effect. - VP09 O'Briensbridge Cross. High sensitivity, slight magnitude of change, slight effect. - VP10 R463 East of O'Briensbridge. Medium sensitivity, slight magnitude of change, not significant effect. - VP11 Scenic Route V59/M7 Motorway. Medium sensitivity, slight effect, not significant effect.
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	• VP12 Limerick City, Thomond Bridge. High sensitivity, slight magnitude of change, slight effect. • VP13 Killeaghy/East Clare Way. High sensitivity, substantial magnitude of change, significant effect. • VP14 Kilbane. High sensitivity, substantial magnitude of change, significant effect. • VP15 Aillemore Lower. High sensitivity, moderate magnitude of change, moderate effect. <i>Additional Receptors Outside of Glenomra Valley</i> • Scenic Route SR-24/R462 Regional Road. Photowire PW-N. On site appraisals found visibility is greatly limited by distance and concealment. The magnitude of change for both receptors is considered negligible giving a long-term visual effect of not significant. • Scenic View V44 and R494. Photowires PW-A & PW-B. Turbines are not within primary views, theoretical visibility is low to none. Magnitude of change is considered negligible giving a long-term visual effect of not significant. • 12 o'clock Hills Looped Walks. Represented by VP06. See cumulative effects. <i>Residential Visual Amenity</i> • Broadford VP05. Visibility Appraisals and ZTV mapping indicated greatest potential for visual impacts at elevated vantage points outside of population centre. Owing to distance, combined with visual screening, the magnitude of change was deemed slight resulting in a visual effect rating of not significant. • Kilbane VP14, PW-I, PW-J & PW-K. The small village of Kilbane is a primary key settlement receptor within the LVIA study area with ZTV mapping indicating full theoretical visibility. Several residences have primary views directed towards the turbines, with views of the turbines described as prominent, with four full towers extending above the horizon, the remainder partially screened and the met mast almost entirely visible. The magnitude of change is substantial giving a long-term visual effect rated as significant. • Aillemore Lower VP15 & Aillemore Upper PW-H. The number of turbines impacting this area is low, although T03, T04 and T05 are prominent in the view. The magnitude of change for the sparse residences of this area is considered to be moderate giving a long-term visual effect rated as moderate. • Bridgetown VP08. See cumulative effects. <i>Ancillary Project Elements (Non-turbine Components)</i> Site Access Roads and Hardstand Areas • Visual effects are very localised. Existing tracks will be used and upgraded with new roads connecting all components of the project. Visual effects are likely to be highly localised and assessed as long-term slight. <i>Meteorological (Met) Mast</i>
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	- The structure is slender and 36.5m in height and is not considered to be imposing. Views are limited and impacts will be localised. Within the site and its immediate setting, the visual effects arising are considered to be slight. <i>Proposed onsite 38kV Substation and Batter Energy Storage System (BESS)</i> - One of the larger and potentially more visually prominent elements of the ancillary infrastructure. There are potential visual effects due to the sloped, elevated nature of the topography at the site from within Glenomra Valley during construction. However, at operational stage visual effects are mitigated by design and on balance residual visual effects at operational stage are deemed to be long term slight. <i>Cumulative Effects</i> <i>Potential for cumulative visual effects with the permitted Fahy Beg and Carrownagowan Wind Farms.</i> <i>East and North-east in the Ardcloony Valley</i> VP03 The Gap Road at Ballygarreen. Simultaneous in-combination effects occur in a future scenario as 6 no. permitted Fahy Beg turbines are visible with 3no. proposed project turbines on the southern slopes of Lackareagh Mt. There is visual balance as the two developments are clustered on slightly lower lands either side of the central peak. VP15 Aillemore Lower. No in-combination or cumulative visual effects as elevated landform obscures the permitted Fahy Beg turbines from view. <i>South and outside Glenomra Valley (Bridgetown and O'Briensbridge)</i> - The Fahy Beg turbines are clearly visible upon the southern aspect of Lackareagh Mt. The proposed project turbines are mostly visually screened from view by the landform of Lackareagh Mt, with only the blades of 3no. turbines visible above a distant skyline. Simultaneous in-combination cumulative visual effects occur but the proposed turbines have a very minor contribution to cumulative effects. <i>West and within Glenomra Valley</i> VP04 R466/SR-26, Cloonyconry More. Successional in-combination effects will occur where the Fahy Beg turbines are visible to the SE. These cumulative effects will only be experienced from southbound receptors on this road and there will be visual separation. VP07 R466/SR-26, Ballyquinn Beg. Representative of northbound receptors. Fahy Beg turbines will not be visible due to screening and landform undulations. (Two blades of a single permitted turbine within the Carrownagowan WF will be visible simultaneously). VP 14, Kilbane. 3 no. of the 8 no. Fahy Beg turbines will be visible therefore successional in-combination effects will occur however this will be mitigated by local screening features which will restrict such in-combination effects from many of the residential receptors. No permitted Carrownagowan turbines are likely to be visible.
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	• VP13, Killeaghy/ECW. Representative of views from elevated vantage point on the ECW with four different fields of view. To the south 2 no. permitted Fahy Beg turbines are clearly visible, to the north the blades of 1 no. permitted Carrownagowan turbine are visible and to the west many turbines of the proposed Knockshavno, Oatfield and Ballycar WF are visible across distant uplands. This location represents the greatest cumulative effects where the proposed turbines cause a substantial magnitude of change and significant residual visual impact with other permitted and proposed wind energy developments with significant cumulative visual effects potentially arising. The integrity of more scenic views throughout the lower elevations of the Valley are retained together with long range views towards the River Shannon to the south and through Broadford Gap to the west (unobstructed by turbines). <i>Potential for cumulative visual effects with the proposed Knockshavno and Oatfield Wind Farms.</i> • VP06 R465 near Formoyle More. There is potential for cumulative visual effects in combination with 3no. proposed Knockshavno turbines from elevated vantage points, including effects on a small number of residential receptors with turbines from both WFs potentially visible in opposing directions. In this uncertain scenario there is potential for successional in-combination effects which are assessed as minor (as only 2 no. turbines are clearly visible). • VP05 Broadford. The proposed Knockshavno and Oatfield WFs will not be visible from VP05. The WFs are likely to be visible from roads approaching Broadford from the north, although no in-combination views occur there is potential for a degree of sequential cumulative effects where different turbines from different WFs maybe seen from different vantage points in a journey scenario. <i>Cumulative visual effects from other receptors in the wider LVIA study area (and beyond 5km)</i> • VP01 Tountinna Mt/Lough Derg. In-combination simultaneous cumulative visual effects will arise with all other permitted and proposed turbines with effects substantially reduced by the factor of distance. As a cumulative collection the turbines occur as small features on the distant horizon or in front of distant ridgelines and are evenly spread out across the vista and do not obstruct or significantly intrude upon the key scenic sensitivities of the view from Tountinna Mt which primarily includes Lough Derg. • VP11 Scenic Route V59/M7. The turbines of the permitted Fahy Beg and proposed Knockshavno and Oatfield WFs are spread out across the distant upland landscape. 3 no. proposed project turbines are visible and extent the horizontal extent of turbines visible. All cumulative turbines are considered to be evenly spaced across the width of the view, in staggered layout both in front of and behind different ridgelines creating a relatively balanced layout appropriate in scale. • VP12 Limerick City/Thomond Bridge. In-combination simultaneous effects arise at the proposed project turbines are
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	visible with the permitted Fahy Beg and Carrownagowan turbines, however they are seen as small features in distant mountains. The proposed Ballycar WF is shown in wireline view and will be clearly visible in other vantage points on Thomond Bridge and Limerick City. The contribution of the proposed project turbines to cumulative effects is considered to be relatively small. <i>Summary</i> There is an accumulation of wind energy developments proposed in East Clare and within the LCA-8 Slieve Bernagh Uplands. The LVIA has determined that the undulating and well-defined landform features and valleys have the potential to reduce the extent of cumulative visual effects, that the Slieve Bernagh Uplands have the capacity to absorb the proposed project and will have limited significant cumulative or in-combination effects with other potential wind energy developments.
Decommissioning Phase	• Similar to construction Phase • Removal of the turbines will result in short-term slight, negative effects.

18.245. Mitigation

18.246. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter. No additional mitigation measures are proposed over and above embedded mitigation measures which have informed the iterative design of the development and include:

- Good design for a ‘Transitional Marginal Landscape’ in accordance with WEDG 2006 and dWEDG 2019,
- The wind farm meets the conditions for set back from housing (500m) in WEDG 2006 and 4 times the tip height set back prescribed for visual amenity (720m) in dWEDG 2019,
- Siting within LCA-8 Sliever Bernagh Uplands classified as having good capacity for absorbing multiple WFs with low sensitivity classification,
- The spatial enclosure of the Glenomra Valley provides visual separation and screening from many visual receptors and in-combination effects,
- Views from the scenic route SR-26 are not seriously hindered or obstructed from the route and the project is designed and located to minimise the visual impact meeting the policy requirements of the CCDP,

- For Kilbane village visual screening by vegetation and buildings and appropriate set-back distances inform the relationship with the proposed turbines, and
- For the ECW, an information Lookout Point and road widening improve the value and safety of the route through the site, with primary long-ranging views not obstructed by the proposed turbines.

18.247. Residual Effects

18.248. For the LCA in which the project site is located (LCA-8 Slieve Bernagh Uplands) sensitivity is low, the magnitude of change moderate and the overall significance of effect rated slight. For all other LCAs within the LVIA study areas effects were found to be imperceptible or not significant. Of the 15 no. viewpoints selected for comprehensive assessment 4 no. were found to have moderate effects, 3 no. slight and 3 no. significant. The remaining VPs were found to have 'not significant' residual effects, and none were found to have 'profound' or 'very significant' effects. **The 3no. VPs with significant effects were: VP04: Scenic Route SR26 Cloonyconry More, VP13: Killeagy/ECW and VP14: Kilbane.** It is acknowledged that **significant visual impacts will occur from a small number of local residential receptors in Kilbane**, but these are mitigated through use of appropriate visual amenity set-back distances of 4 times the tip height (720m) in accordance with dWEGD 2019.

18.249. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.250. I have examined, analysed and evaluated Chapter 13 of the EIAR, the associated documents and submissions on file in respect of landscape and visual amenity. I am satisfied that the applicant's understanding of the baseline environment is comprehensive and that the key impacts in respect of likely landscape and visual effects have been identified. Parties to the appeal, and refusal reason No.1 of the PA, raise a number of issues in respect of landscape and visual amenity which I address below.

PA Refusal Reason No.1 – Landscape and Visual Effects

18.251. In its first reason for refusal the PA noted the location of the project within the '*Slieve Bernagh Bog LCA*' and within an area '*Open to Consideration*' for wind energy development on a case-by-case basis subject

to viable wind speeds, environmental resources and constraints and cumulative impacts. The PA opined that:

“Having regard to the location of the site in the more sensitive and scenic area of the LCA (Lackareagh and Glengalliagh Mountains), the PA considers that the proposed turbine structures, by reason of their height (tip height up to 180m), scale and siting on this open, exposed and sensitive upland landscape would constitute a prominent feature on the landscape from both local and long range viewpoints, and would therefore seriously injure the visual amenities of the area. Furthermore, it is considered that the development would be highly visible from, and negatively impact upon, the R466 Regional Road which is a designated Scenic Route and would negatively later the character of this rural landscape.”

The PA therefore considered the proposed development would contravene Objectives CDP14.2 and CDP 14.7 of the CCDP. *(I am satisfied that this refusal reason covers the concerns raised by parties to the appeal with the exception of ‘overbearing’ and ‘spatial dominance’ concerns.)*

- 18.252. In response the applicant corrects the reference to the LCA by the PA, which should read ‘*Slieve Bernagh Uplands*’ (not Bog). I note this correction, and I am satisfied that this is not of material significance to the reason for refusal. The applicant responds that the ‘*sensitivity*’ of the LCA as classified in the CWES (Table 4a) is ‘*medium to low*’ and opines that the PA use of the wording ‘*more sensitive*’ is not reflective of the applicable policy. Furthermore, the applicant points out that the ‘*Lackareagh and Glengalliagh Mountains*’ are not broadly identified as ‘*highly sensitive*’, and that it is the ‘*mountains overlooking Lough Derg*’ or ‘*the unenclosed bogs of Lackareagh and Glengalliagh Mountain*’ which are specifically described as highly sensitive. In this regard the applicant refers to the conclusions of the LVIA that the project has no theoretical visibility from the mountains on the western edge of Lough Derg. In relation to the unenclosed bogs, the applicant opines that sensitivity is derived from ecological value and not visual characteristics and in any event

confirms that the project is not located within these unenclosed bogs, but within coniferous forestry or on low-agricultural lands.

- 18.253. In relation to the PA position that the proposed turbines are sited in an open and exposed upland landscape, the applicant accepts that the Slieve Bernagh Uplands is generally an open and exposed landscape but considers that it is untrue that the location of the proposed turbines can be described as open and exposed. In this regard the applicant points to the findings of the LVIA which demonstrates very limited exposure from the majority of the 20km study area, and most receptors outside of 5km, owing to the enclosure of the Glenomra Valley. The applicant otherwise asserts that the height, scale and siting of the proposed turbines is functionally appropriate for good wind farm design meeting the appropriate WEDGs guidance for Transitional Marginal Landscapes. This is primarily based on the proposed siting of 3 no. turbines either side of an upland ridge, combined with 4 no. turbines at lower elevations below the ridgeline, avoiding visual dominance and allowing visual balance with landcover and landscape.
- 18.254. The applicant notes the PA's assertion that the proposed turbines constitute a '*prominent feature*' from '*long-range viewpoints*' and contends that this is not supported in evidence, pointing to the findings of the LVIA and ZTV analysis in relation to the limited visual exposure within 'vast' areas of the 20km study area. In relation to impacts on '*local viewpoints*' the applicant accepts that the turbines will naturally be visually prominent to local receptors but opines that the more salient question is whether the development as a whole appears out of scale in the chosen setting. In this regard the applicant opines that the proposed development has been designed and optimised to meet all six categories in accordance with the guidance set out in the WEDGs, that impact will be limited to a very low number of local receptors, that impact will be greatly reduced or eliminated by roadside screening, and that the assertion of 'serious injury' is therefore unsupported.
- 18.255. The applicant notes the PA position that the development will be highly visible from, and negatively impact upon, the R466 regional road together with

the comment in the recommending planning officers report that *'the development will dominate all views from the R466 Scenic Road from Broadford to Bridgetown and will fundamentally alter the scenic landscape'*. The applicant responds that this stretch of road is 8.8km in length and was a key focus of the LVIA represented by VP04, VP07 and VP08, with VP04 & VP07 representing open views within a 2km stretch of the route and the worst-case scenario having *'significant'* and *'moderate'* effects. VP08 representing views from Bridgetown was found to be *'not significant'*. The applicant refers to the LVIA which found that most of the R466 (SR-26) is visually screened to the degree of intermittent/partial to dense/full such that the assertion that the turbines are *'highly visible'* and will *'dominate all views'* is false and applies only to a small portion of the route which is not representative of the full route. The applicant opines that the turbines range from visually balanced to visually separated within the available views, that the route is not well-trafficked and has relatively few receptors with impacts limited to local receptors. The applicant refers to the scenic road policy test set out in the CCDP (*Section 14.5, p.356*) and opines that the development is compliant as views are not *'seriously hindered or obstructed'* and the project has been designed to *'minimise visual impact'*. Otherwise in terms of the PA position that the proposed development will negatively alter the character of the rural landscape, the applicant considers this position to be vague and unjustified. The applicant responds that the landscape has low to medium sensitivity, is a marginal landscape modified by existing commercial forestry and low-intensity agricultural activities and that the project LVIA found residual landscape effects ranged from *'imperceptible'* to *'slight'*, with design in accordance with WEDGs clearly demonstrated.

- 18.256. In simple terms, I am of the view that the PA's reason for refusal was heavily premised on the view that the proposed wind farm is located on open and exposed lands within areas of the LCA which are more sensitive, and with a high degree of visibility and impact. I am of the view that this position was taken without due regard to the project LVIA or the ZTV mapping prepared and submitted with the application. There is inadequate justification for the

position taken by the PA that the site is open, exposed and '*more sensitive*' which appears inconsistent with the designations and classifications set out and described in the CCDP and CWES. There is also a paucity of objective assessment relative to the contrary evidence and conclusions of the LVIA. I accept that there can be a degree of subjectivity to the assessment of landscape and visual impacts and therefore an objective assessment of the central facts of the case and the expert evidence and assessments presented within the application is particularly important.

18.257. In my view, the facts of the case are clear and there is a notable absence of material landscape and visual amenity constraints and considerations in respect of the proposed windfarm development at the location of the subject site. In this regard salient considerations include the classifications in the CWES that the location of the site has 'medium to low sensitivity' and is appropriate for 'large' windfarms (*defined as 11-20*), that the site is '*Open to Consideration*' for wind energy in the CCDP, that more sensitive, '*Heritage*' living landscapes were scoped out of the LVIA on the basis of almost entirely no, or no theoretical visibility, that no significant cultural heritage or archaeological features were signposted, that the site is modified by existing commercial forestry and low-intensity agriculture, and, inter alia, that the site has no theoretical visibility from the (more sensitive) Mountains overlooking the western edge of Lough Derg and is not located within unenclosed bog. Accordingly, I do not accept that the premise on which the PAs first refusal reason was based is correct, and I consider that it does not sustain.

18.258. Having inspected the site, and assessed the application particulars, I consider that the collective evidence in relation to landscape and visual impacts is persuasive and I am entirely in agreement with the findings of the LVIA and ZTV mapping that the general visibility of the site is limited by, and to, the enclosure of the Glenomra Valley. As such landscape and visual impacts from sensitive areas, such as Lough Derg to the east, and from settlements such as Broadford, Bridgetown and Killaloe are not significant and

are correctly assessed. I am satisfied that the material considerations arising are limited to impacts on local residential receptors, the East Clare Way recreational route and the R466 Scenic route.

18.259. Having assessed the full extent of the R466 in a northbound and southbound direction, including the selected viewpoints, I am of the view that the horizontal and vertical alignment of this road is such that the driver is not presented with sustained inwards views of fully exposed turbines and that any such views are largely peripheral and fleeting where they do present, being also over distance and very significantly mitigated by vegetation, natural and built landform screening even in a winter scenario. Within the 2km stretch of this scenic road, where the LVIA assesses that more open views are available and impacts are 'significant' and 'moderate', I am of the opinion that such views will be perceived as limited, brief and localised, especially when considered in the wider context of the landscape and experience of the road network. I noted that such 'open views' are not necessarily available to the driver but are experienced with significance mostly from a stationary view, which is likely to be an infrequent experience given the absence of safe stopping locations or designated viewpoint(s). In my opinion the location of viewpoints VP04 and VP07 and the scenic route generally (between Broadford and Bridgetown) has a general rural character which is not unique or exceptional and is removed from the more important or iconic scenic qualities of the wider area. Accordingly, whilst I accept that significant landscape and visual effects will occur in respect of regional road R466 and Scenic Road SR26 as represented by **VP04 (Scenic Route SR26 Cloonyconry More)** I consider that they are somewhat mitigated by the aforesaid considerations and are not such that would warrant refusing permission.

18.260. In relation to the ECW, I accept that the introduction of turbines into the landscape will have significant landscape and visual effects on the ECW primarily for the short stretch which occurs within and through the subject site. However, I also note that the safety of the route will be enhanced by widened and improved surfaces at this location and that the value will be enhanced by

the addition of the informational look out point and I note that key/primary long range (outward) views are not obstructed. I am also mindful of the evidence submitted with the application that there is no correlation between windfarm development(s) and performance in the Tourism sector and that public perceptions, including those of tourists, are broadly positive towards windfarms. I am also of the opinion that walking and recreational trails and routes are not necessarily incompatible with windfarm developments, and in this regard I am mindful of the many national examples of waymarked trails and hiking routes which exist in proximity to windfarms without significant material effect on their continued use. Accordingly, whilst I accept that significant landscape and visual effects will occur in respect of the ECW as represented by **VP13 (Killeagy/ECW)**, I consider that they are somewhat mitigated by the aforesaid considerations and are not such that would warrant refusing permission.

- 18.261. I note that the layout of the development provides that turbines will meet the additional set back distance (for visual amenity reasons) from residential receptors of 4 x times the tip height as set out in the dWEDG 2019. Accordingly, no turbines will be located within 720m of any habitable dwelling. I accept that the turbines will be visible and prominent when viewed from local residential properties within the immediate area of the site and particularly within the village of Kilbane but consider that turbines will not be overbearing on any individual dwelling. I agree that significant visual impacts will occur from a small number of local residential receptors in Kilbane, as represented by **VP14: (Kilbane)** but these are not such that would warrant refusing permission.

Cumulative Effects

- 18.262. Having regard to the assessment and conclusions set out in the LVIA I am in agreement that significant cumulative landscape and visual effects or concerns do not arise, beyond those which might be reasonably expected on lands which are designated as 'strategic', 'acceptable in principle' and 'open to consideration' for wind energy developments. In this regard, I am satisfied that

the strategic level cumulative effects were considered and addressed in the SEA and HDA processes to which the CWES and CCDP were subject, and that therefore the project level assessment of cumulative effects set out in the LVIA and EIAR submitted is adequate, proportionate and acceptable.

18.263. Conclusion: Direct and Indirect Effects (*Landscape & Visual*)

18.264. Having regard to my assessment of the proposed development on landscape and visual effects, it is considered that the proposed development will give rise to significant landscape and visual effects in respect of regional road R466 and Scenic Road SR26 as represented by **VP04 (Scenic Route SR26 Cloonyconry More)**, the East Clare Way as represented by **VP13 (Killeagy/ECW)**, and from a small number of local residential receptors in the immediate area of the site including Kilbane village, as represented by **VP14: (Kilbane)**. These effects will be mitigated by a combination of topography, screening, distance, set back distances and design etc. however significant residual effects will remain. Notwithstanding this, having regard to the evidence of generally positive public attitudes to wind farm developments, the absence of adverse tourism effects and the pressing need to dial up renewable energy sources (including onshore wind) and reduce GHG emissions, it is considered that these effects are not sufficient to warrant refusing permission for the development and are acceptable.

18.265. Cultural Heritage

18.266. Issues Raised

18.267. Parties to the appeal did not raise any specific issues in relation to the effects of the development on cultural heritage (other than tourism, recreation or visual impacts considered elsewhere in this report) and the PA was satisfied that cultural heritage issues were adequately assessed by the applicant. The statutory report from the DHLGH (Archaeology (2nd October 2024)) acknowledged the findings of the cultural heritage impact assessment and broadly concurred with same and the recommended mitigations measures

set out therein. This report sets out recommended conditions which the Board will noted align with sample conditions C.3,4 and 6 of the OPR practice note PN03: Planning Conditions (October 2022) with appropriate site-specific adaptations.

18.268. Examination of the EIAR

Context

18.269. Chapter 14 of the EIAR deals with cultural heritage and presents the results of the cultural heritage impact assessment of the proposed development. It includes an assessment of UNESCO World Heritage Sites, National Monuments, Recorded Monuments, Protected Structures, NIAH structures/historic gardens, potential unrecorded archaeology and items of local cultural heritage merit. The relevant international and national legislation and guidance for the protection of the cultural heritage resource is set out in Section 14.1.3 and including regard to the European Convention on the Protection of the Archaeological Heritage (Valletta Convention), the Granada Convention, the National Monument Acts 1930-2004, the Cultural Institutions Act, 1997, the Record of Monuments and Places and the National Inventory of Architectural Heritage. A Statement of Authority is included.

Associated Figures and Appendices are:

- Appendix 14-1 Photographic Record of Field Inspections

18.270. The assessment methodology included management of archaeological and architectural heritage datasets using GIS and ESRI, desktop assessment with a discussion of sources in Section 14.2.2. and field inspection including a walk-over and windscreen survey in March 2023 and 2024. The methodology for the assessment of likely significant effects is discussed in Section 14.2.4 including types of effect, magnitude of effects and indirect effects on visual setting. No significant limitations were encountered during fieldwork.

Baseline

18.271. There are no UNESCO WHS or those on the tentative list within 20km of the proposed turbines, with the nearest being the Royal Site of Cashel

(tentative list) 53km to the southeast. There are four National Monuments within 10km of the proposed turbines and these are listed in Table 14-3 and their location shown on Fig.14-2 of EIAR Chapter 14. The distances range from 5.6km to 7.9km with one monument within Co. Tipperary and one (Brian Boru's Fort Nat.Mon.No.591) subject to a preservation order. The ZTV indicates no theoretical visibility with Brian Boru's Fort or Derry Castle (in Tipperary), and theoretical visibility of 3-4 turbines from St. Molua's Church and also St. Flannan's Church. Three recorded monuments are located within the proposed windfarm site and all comprise enclosures. They are listed in Table 14-4 and their location is shown in Fig 14-4. (Ref.No. CL044-063, CL044-031 and CL044-086 refer). There are 131 recorded monuments within 5km of the proposed turbines, also listed in Table 14-4 and with their location shown on Fig. 14-5. The ZTV shows that 49 of the 131 monuments will have theoretical visibility of 5-7 turbines, 26 will have theoretical visibility of 3-4 turbines, 19 will have theoretical visibility of 1-2 turbines and 37 have no theoretical visibility of any turbines. The excavations database shows one entry returned for the townland of Lackareagh Bog but with no archaeological findings and no find spots are recorded for the windfarm site on the topographical files of the National Museum of Ireland. No archaeological landscapes have been designated in the CCDP.

- 18.272. There are no Protected Structures within the windfarm site, with one Protected Structure (Kilbane Bridge, Ref. 188) located just inside the EIAR site boundary in the village of Kilbane. No works will occur to the bridge as a result of the proposed development. There are 10 no. protected structures within 5km of the proposed windfarm and these are listed in Table 14-5 and their location shown in Fig. 14-9. The ZTV shows that three structures will have theoretical visibility of 5-7 turbines, four structures will have theoretical visibility of 3-4 turbines, one structure will have theoretical visibility of 1-2 turbines and two structures will have no theoretical visibility of any turbines. The nearest structures are Kilbane Bridge as referenced above, and St. Mary's Church (Ref. 99) both of which are located in Kilbane Village and are 992m and 1.2km from the nearest proposed turbine T02 respectively. There are no NIAH

structures or historic gardens within the windfarm site, with six structures and seven historic gardens located within 5km of the of the proposed turbines. These are listed in Table 14-6 & 14-7 and their location shown on Fig. 14-11. The nearest (which is not also a protected structure) is Ballyquinn House which is 2.4km from the nearest turbine T07 and is no longer extant, with many original garden features no longer present.

18.273. For the proposed Grid Connection Route (GCR) Cultural Heritage Assets within 100m either side of the route are included in the assessment. Two recorded monuments are located within 100m of the proposed GCR and CL044-86 (also within the windfarm site) and CL044-061 refer, both enclosures. These monuments are listed in Table 14-9 and their location shown on Fig. 14-13 with the project not extending through the Zone of Notification for either monument. Two Protected Structures are located within 100m of the proposed GCR, both bridges and comprising Kilbane Bridge (Ref. 188) and Blackwater Bridge (Ref.650). As stated above, no works are proposed to Kilbane Bridge (which is also the only NIAH record within 100m of the GCR). The proposed GCR crosses Blackwater Bridge using the option of strapping the electrical cable to the side of the bridge structure with a stainless steel pipe as there is insufficient depth in the bridge deck and HDD is not feasible due to the curvature of the road. Two items of cultural merit where also noted along the proposed GCR comprising bridges as identified on Table 14-44. One is unnamed and the other is Aghnagor Bridge, with HDD proposed at both crossings no effects will occur.

Potential Effects

18.274. The EIAR identifies the potential for a range of environmental effects on cultural heritage. The likely significant effects (potential direct, indirect and cumulative) as identified in the EIAR, are summarised in Table CH1 below:

Table CH1: Summary of potential effects (*Cultural Heritage*)

Project Phase	Potential Effects
Do Nothing	Land use would continue without the need for mitigation measures.

Construction Phase	<i>Indirect</i> - No indirect effects were identified at the construction stage. <i>Direct</i> <i>UNESCO WHS</i> - There are no such assets within 20km. No direct effects to such assets are identified. <i>National Monuments</i> - No such archaeological resources within the windfarm site, blade transition area, the TDR or GCR. No direct effects are identified. <i>Recorded Monuments</i> - Three recorded monuments within the windfarm site. CL044-63, CL044-31 and CL044-86. None are located within the footprint of development and no direct effects are identified. - There are 131 recorded monuments within 5km of the proposed turbines, all are at a sufficient distance such that no direct effects will occur. - Two recorded monuments are within 100m of the proposed GCR. CL044-86 and CL044-061. These monuments are located off road and will not be directly affected by the route within the public road. The GCR does not enter the ZoN for either monument. <i>Sub-surface Archaeological Potential</i> - There is potential that sub-surface archaeological sites or features may be directly affected by construction phase activities. This is assessed as direct, negative and permanent in the absence of mitigation. <i>Protected Structures</i> - No Protected Structures within the proposed windfarm site and therefore direct effects are not identified. - There are two Protected Structures within 100m of the proposed GCR. Kilbane Bridge (RPS Ref. 188) and Blackwater Bridge (RPS Ref, 640). Works are not proposed to Kilbane Bridge therefore direct effects will not occur. It is not envisaged that works to strap the cable to Blackwater Bridge will negatively affect parapet walls or arch ensuring no direct negative effects. <i>NIAH Structures</i> - No structures within the windfarm site, blade transition area or TDR, therefore direct effects are not identified. - Six structures within 5km of the proposed turbines are considered to be at a sufficient distance such that no direct effects will occur. - One structure is within 100m of the proposed GCR (Kilbane Bridge). No works are proposed to this structure and no direct effects are identified. <i>Features of Local Cultural Heritage Merit</i> - Two items were identified along the proposed GCR, both bridges (Unnamed CH1 and Aghnagor Bridge CH2). HDD will be utilised at CH1 and the crossing at CH2 will be within
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	the bridge deck. Potential direct effects are therefore not identified.
Operational Phase	<i>Indirect (effects on setting of cultural heritage sites)</i> <i>UNESCO WHS</i> - There are no such assets within 20km. No indirect effects to the setting of such assets are identified. <i>National Monuments</i> - No such archaeological resources within the windfarm site, blade transition area, the TDR or GCR. Three National Monuments are located within 10km of the proposed turbines as identified in Table 14-12 with either no effects or imperceptible effects identified due to distance. <i>Recorded Monuments</i> - There are 131 recorded monuments within 5km of the proposed turbines of which 3 no. are within the windfarm site. CL044-63, CL044-31 and CL044-86. The potential effects are assessed and set out in Table 14-13 and range from NA/ - not significant – imperceptible -slight – moderate (17no.) <i>Protected Structures</i> - No Protected Structures within the proposed windfarm site. There are 10 Protected Structures within 5km of the proposed windfarm. Potential effects on setting are assessed and set out in Table 14-14 and range from not significant – imperceptible – moderate (3no. – Kilbane Bridge, St. Mary's Church and Glenomera House) - There are two Protected Structures within 100m of the proposed GCR. Kilbane Bridge (RPS Ref. 188) and Blackwater Bridge (RPS Ref, 640). Works are not proposed to Kilbane Bridge. A change to the setting of Blackwater Bridge as a result of works to strap the cable to the structure is acknowledged but assessed as not significant. <i>NIAH Structures & Gardens</i> - No structures within the windfarm site, blade transition area or TDR. Six structures and seven historic gardens are within 5km of the proposed turbines. Potential effects on setting are assessed and set out in Table 14-15 and range from not significant – imperceptible - moderate (2no. – Kilbane Bridge and St. Mary's Church, Kilbane) <i>Features of Local Cultural Heritage Merit</i> No potential visual effects to this aspect of cultural heritage resource are identified.
Decommissioning Phase	No significant potential effects predicted.
Cumulative Effects	The other plans and projects considered in the cumulative assessment are described in Chapter 2 of the EIAR, with all extant planning permissions within 25km and large-scale developments within 20km of the proposed windfarm considered including the

	permitted Carrownagown, Fahy Beg and proposed Oatfield, Knockshavno and Ballycar windfarms and individual turbines (Vistakon and Parteen) as detailed in Table 14-17. <i>Construction Stage</i> UNESCO WHS, National Monuments, NIAH and RPS structures or sites are considered to be located at sufficient distance and will not be directly affected by the project. No cumulative effects will occur (as none were identified in the first place). Cumulative direct effects could potentially occur on recorded monuments when all the other projects are considered together. Cumulative direct effects could also potentially occur to hitherto unknown sub-surface archaeological finds, features or deposits which would be direct, permanent and negative. <i>Operational Stage</i> No UNESCO WHS sites within 20km, no potential for cumulative effects. A potential increase to the cumulative visual effects on the wider setting of National Monuments No.6 and No.279 in Killaloe are identified when the theoretical visibility of the project, Knockshavno, Oatfield, Fahy Beg, Ballycar and the single Parteen and Vistakon turbines are considered. This is assessed as increasing from imperceptible to not significant. No cumulative effects to the immediate setting are identified. Cumulative assessment confirms that only the permitted Fahy Beg and Carrownagowan turbines are within the 5km study area for Protected Structures and NIAH. The ZTV indicates that none of the Carrownagowan turbines and only some of the Fahy Beg turbines will be theoretically visible and increased cumulative effects are not predicted.
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18.275. Mitigation

18.276. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter. Measures are extensive and in relation to Cultural Heritage include:

- Pre-construction archaeological testing under licence from NMS and report on testing to NMS and PA.
- Further mitigation as required including preservation in situ, by record, and buffer zones.
- Archaeological monitoring by a licensed archaeologist.
- Construction methodologies (as outlined in EIAR Chapter 4) and including cables attached to Blackwater Bridge (RPS Ref. 650),

consultation with LA Heritage Office and supervision of works by qualified archaeologist.

18.277. Residual Effects

18.278. The residual effects after the implementation of mitigation measures is likely to be not significant at construction stage, and at operational stage is likely to be imperceptible on National Monuments and imperceptible-moderate on Recorded Monuments, Protected Structures and on NIAH Structures and Historic Gardens.

18.279. Analysis, Evaluation and Assessment: Direct and Indirect Effects

I have examined, analysed and evaluated Chapter 14 of the EIAR, all of the associated documentation, reports and observations on file in respect of cultural heritage. I am satisfied that the applicant's understanding of the baseline environment is comprehensive and that the key impacts of likely effects on cultural heritage as a consequence of the development have been identified. No issues have been raised by any party to the appeal in respect of cultural heritage. Having regard to the location of the site, specifically the absence of resources within the development footprint, the distance at which the majority of resources are located, the work methodologies for Protected Structures and the GCR, and arrangements for archaeological testing, preservation and monitoring, I am satisfied that there is no potential for any significant direct, indirect or cumulative effects on cultural heritage as a result of the proposed development.

18.280. Conclusion: Direct and Indirect Effects (*Cultural Heritage*)

18.281. Having regard to the foregoing and the examination of environmental information in cultural heritage, it is considered that there is no potential for significant environmental effects.

18.282. Material Assets - Traffic

18.283. Issues Raised

18.284. Issues raised in the observations relate to the capacity of local and regional road infrastructure, legal interest in the TDR and transport routes, suitability of diversion routes, traffic impacts associated with use of a local quarry in Broadford, failure to assess forestry (and felling) traffic, RSA does not consider Kilbane Village, volume of traffic, impacts on Aviation. The PA was generally concerned that a suitable source of aggregate and stone had not been identified, that there is not an active quarry in Broadford (as indicated) and therefore there is uncertainty as to the origin of construction materials and associated impacts. Otherwise, the PA considers the concrete pour for turbine foundations to be low, that cumulative impacts, impacts on pedestrian and cyclist safety (particularly with regard to the ECW) and impacts on residential amenities were not adequately assessed. The LA Road Design and Killaloe MD Roads Office reports set out observations and recommended conditions in the event that permission is granted. Traffic was not a material consideration in the decision of the PA to refuse planning permission.

18.285. Examination of the EIAR

Context

18.286. Chapter 15 of the EIAR deals with traffic issues associated with the proposed development and addresses the likely significant effects of the proposed development on transportation infrastructure, with the construction period considered the critical period with respect to traffic effects in terms of additional traffic volumes and the geometric requirements of abnormal loads. A statement of authority is included. The relevant appendices are:

Appendix 15-1 Traffic Count Data

Appendix 15-2 Traffic Management Plan

Appendix 15-3 Swept Path Analysis

Appendix 15-4 Road Safety Audit

18.287. The results of the scoping and consultation exercise are presented in Section 15.1.1.4. The methodology is described in Section 15.1.1.6 and follows guidance set and recommended by TII 'Traffic and Transport

Assessment Guidelines, May 2014'⁶⁵. The geometric requirements of the transporter vehicles were assessed using AutoCAD and Autotrack.

Baseline

- 18.288. It is proposed to access the proposed wind farm site via the L7080 local road (Gap Road) which bisects the site. During construction the L7080 will be widened within the site (where necessary) and then returned to a similar running width. It is proposed that there will be 4 no. access junctions off the L7080 serving the 7 turbines, BESS and proposed onsite 38kV substation, one of which is existing and three of which will be new permanent site entrances. 3 no. temporary site entrances for construction access are also proposed. The proposed GCR is approx. 14.7km in length from the site to the existing Ardnacrusha 110Kv Substation as shown in Fig 15-1.
- 18.289. The proposed TDR from Foynes Port to the proposed wind farm site is shown in Fig 15-2 and utilises the N69, N18, M7, R494, R496, R463, R466, L-3022 and L-7080 to access the site. The route is described in Section 15.1.2.2. An assessment of the turning requirements of abnormally large loads was undertaken at various pinch points along the TDR and this is identified in Fig. 15-2 with discussion on the swept path assessment undertaken in Section 15.1.8.
- 18.290. It is proposed that most rock and hardcore materials will be sourced on site from cut exercises and the onsite borrow pit. All ready-mix concrete will be sourced from local, appropriately authorised quarries, with the most likely sources to the west of the site and east of Broadford as shown on Fig 4-22. The potential routes for general construction materials will be as per the TDR with the additional route from the west as shown in Fig. 15-1.
- 18.291. For the N69 and M7 base year traffic count data for the year 2023 was obtained from automated (ATC) sites maintained by TII. For the R494, R463, R446 and L3022 base year traffic count data was obtained from all day traffic counts on 15th May 2024, which includes 2-way link flows and junction turning

⁶⁵ Document No. PE-PDV-02045

data. Full results are included in Appendix 15-1 and all-day traffic flows are shown in Table 15-2. As expected, the highest flows per day are on the M7 (45,656) and N9 (6,374) and also on the R494 (6,885) south of Killaloe. Once the route moves to O'Briensbridge and towards the site volumes reduce to 3,996 (R446 east of O'Briensbridge), 1,976 (R466 west of O'Briensbridge) and 272 on the L3022 on approach to the site. The base year data was then used with TII guidelines to produce background traffic forecasts for an assumed construction period of 2028 to 2030, with an assessment year of 2030. Based on TII growth rates it is estimated that traffic volumes will increase by 11.4% for the N69 and M7 and by 9.7% for the Regional and Local Roads with the observed percentage of HGV's ranging from a minimum of 2.3% on the R494 south of Killaloe to 9.7% on the R446 approaching the site (year 2030). The results are shown in Table 15-6.

Potential Effects

- 18.292. The assessment of the traffic which will be generated during construction is considered in two stages with stage one being all general construction works including ground works, and stage two being specifically the wind turbine component delivery and construction stage. Traffic generation estimates are based on a total construction period of 18-24mts, with the shorter 18mts period modelled on a precautionary basis as it will result in a higher volume of traffic. Stage 1 is estimated to last 11 months or 357 days during which there will be a total of 4,732 deliveries to the site. The most intense phase of traffic movements will be during a 7-day period when the concrete wind turbine foundations will be poured with 80 loads required for each turbine (one turbine per day) resulting in 7 HGV trips per hour or 384 two-way PCU's added to the network. Over the remaining 350 days, traffic will increase by an average of 57 PCU's (Tables 15-8 and 15-9 refer). At stage 2, there will be 56 trips by extended articulated vehicles and 28 by standard or large articulated HGV's associated with the turbine delivery element, which is estimated to take 19 days over a 4-week period with all deliveries at night. Other equipment will be delivered 2 days per week over 4 weeks with a total

additional 60 PCU's on the network (and 19.2 PCU's on 7 other days) and Table 15-11 refers. Employee traffic is estimated at 70 PCU movements during stage 1 and 45 during stage 2.

The effects of these estimates on daily traffic flows during construction is summarised in Section 15.1.5.2, detailed in Tables 15-13 to 15-20 and is further summarised as follows:

- Stage 1 - during the 7-day concrete pour it is estimated that the increase in traffic volume will range from +5.7% (N69) down to 0.8% (M7), followed by +5.8% on the R494 south of Killaloe. West of the Shannon the percentage difference increases as base traffic levels decrease with +9.9% forecast on the R463, +31.2% on the R446 and +137% on the L3022.
- Stage 1 – during the main 350 days construction period it is estimated that the increase in traffic volume will range from +1.69% (N69) down to 0.2% (M7), followed by +1.6% on the R494 south of Killaloe, +2.8% on the R463, +8.7% on the R446 and +38.6% on the L3022.
- Stage 2 – during the 19 day period (night time) when the turbine elements will be delivered by abnormal loads it is estimated that the increase in traffic volume will range from +1.3% (N69) down to 0.1% (M7), followed by +1.3% on the R494 south of Killaloe, +2.3% on the R463, +7.2% on the R446 and +31.9% on the L3022.
- Stage 2 – during the other 7 days it is estimated that the increase in traffic volume will range from +0.8% (N69) down to 0.1% (M7), followed by +0.8% on the R494 south of Killaloe, 1.4% on the R463, +4.4% on the R446 and +19.4% on the L3022.

18.293. Capacity assessment results, based on TII documents, are set out in Tables 15-21 and 15-23 and vary from 11,000 per day on the N69 up to 55,000 on the M7 and down to 5,000 on the regional roads. It is estimated at 3,000 for local roads. Based on this the N69, R466 and L3022 are forecast to operate well within capacity by year 2030 for construction day scenarios. The M7 is forecast to operate at its link capacity, but the project is predicted to have an imperceptible effect at +1% maximum in the unlikely scenario that concrete deliveries use a remote source. The R494 (south of Killaloe) is forecast to operate over capacity by 2030 with background traffic alone at 156%. In the unlikely event this route is used for concrete deliveries from a remote source then impact is predicted at a maximum of 2% above base traffic. The R463 is predicted to operate at 92% for the year 2030 with

background traffic. In the event concrete is delivered via this route, this will increase to 101% on the 7 days of delivery, reducing to 94% for the remainder of construction. Operational impacts are considered to be imperceptible. A Junction capacity test was undertaken on the R466/L3022 junction as the TII threshold of +10% increase in traffic had been met. The results are set out in Table 15-24 and show a slight effect with the junction forecast to operate well within the acceptable TII limit of 85%.

18.294. Traffic generation during construction of the proposed GCR is considered in the aforesaid assessment. In terms of road closures and diversions, the GCR is broken into 7 sections as described in Section 15.1.6. In summary construction of the GCR will take approx. 147 days with a road closure required at one point on the network on each of those days with the maximum days incurred 43 days (Section 4, 7.3km) and the minimum 2 days (Section 2, 8.2km). The diversions incurred have a maximum length of 17.3km (Section 6, 18 days) and a minimum of 1.8km (Section 3, 34 days). The traffic volumes impacted are assessed as low being primarily local roads.

18.295. All traffic impacts, deliveries, closures and diversions etc will be managed by a detailed TMP (Appendix 15-2) which will be agreed with the Roads Authority and An Gard Siochana prior to commencement of works.

18.296. The EIAR identifies the potential for a range of environmental effects on traffic. The likely significant effects (potential direct, indirect and cumulative) as identified in the EIAR, are summarised in Table T1 below:

Table T1: Summary of potential effects (*Traffic*)

Project Phase	Potential Effects
Do Nothing	No effects with respect to traffic and transport. The opportunity to capture part of Clares valuable renewable energy resource would be lost together with the opportunity to contribute to meeting national and international targets for the reduction of GHG emissions.
Construction Phase	<i>Proposed Windfarm</i> The traffic generated during the 7-day concrete turbine foundation pour and the associated impacts (as described

	above) are assessed as a temporary negative effect on delivery routes with impact forecast to be slight. - For the remaining 350 days of Stage 1 construction works the traffic generated and the associated impact (as described above) are assessed as a temporary negative effect on delivery routes with impact forecast to be slight. - On the 19 days during Stage 2 when abnormally sized loads will deliver large turbine components to the site, the traffic generated, and the associated impacts (as described above) are assessed as a negative, temporary slight effect if undertaken at night as proposed. - For the additional 7 Stage 2 days, the traffic generated and associated impacts (as described above) are assessed as a temporary imperceptible negative effect on the majority of the delivery route and a temporary slight negative effect on the L7080 leading to the windfarm site. <i>Proposed GCR</i> - The traffic volumes, road closures and diversions (as described above) are assessed as a transient, temporary and slight effect.
Operational Phase	The effects of delivery traffic (1 to 2 trips per day) are assessed as negligible, maintenance traffic effects are assessed as imperceptible.
Decommissioning Phase	<i>Proposed Windfarm</i> - Similar to construction stage but materially less. <i>Proposed GCR</i> - No impacts. The GCR will remain in place.
Cumulative	The other plans and projects considered in the cumulative assessment are described in Chapter 2 of the EIAR and listed in Appendix 2-3. It is considered that there are two permitted windfarms with high potential for traffic related cumulative impacts (Carrownagowan and Fahy Beg) and three proposed which are determined to have medium risk of cumulative traffic related impacts (Ballycar, Oatfield and Knockshavno). In the event that construction runs concurrently with any of these wind farms the traffic related cumulative impacts would be negative, short-term and slight to moderate based in the potential overlap of TDRs and associated traffic generation. Other projects considered in the cumulative assessment of traffic effects and assessed as having a low potential for cumulative effects are listed in Table 15-28 of EIAR Chapter 15.

Mitigation

18.297. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of

the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter. Measures are extensive and in relation to Traffic include:

- Mitigation by design including the most appropriate TDR requiring minimum remedial works and the shortest GCR minimising impacts on the road network and traffic.
- A detailed Traffic Management Plan (TMP) to be agreed with the local roads authority and An Garda Siochana prior to the commencement of works and which includes: Signage, Flagmen, Traffic Management Co-Ordinator, Delivery Programme, Advance notice to local residents with emergency number, Pre and Post Construction Condition Survey, liaison with relevant authorities, temporary alterations to road network at critical junctions, identification of delivery routes, travel plan for construction workers, delivery times for large turbine components (at night), diversion routes and re-instatement works.

Residual Effects

18.298. The residual effects after the implementation of mitigation measures are likely to be a slight temporary negative effect at construction stage which will be minimised by mitigation measures included in the TMP. There will be no residual effects at Operational stage and at decommissioning stage the residual effect will be temporary slight to imperceptible.

18.299. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.300. I have examined, analysed and evaluated Chapter 15 of the EIAR, all of the associated documentation and observations on file in respect of traffic. I am satisfied that the applicant’s understanding of the baseline environment is comprehensive and that the key impacts in respect of likely effects on traffic as a consequence of the development have been identified. Parties to the appeal have raised a number of issues in respect of traffic which I address below.

Capacity of the local and regional road infrastructure (Volume of Traffic)

18.301. I acknowledge that the proposed development will introduce a significant increase in traffic, including HGV traffic, on the local and regional roads that provide access to the wind farm site during construction and that this will be particularly intense during the 7-day period when it is proposed to pour the concrete foundations for the proposed turbines. I also acknowledge that there will be considerable disruption to local traffic associated with the transient construction of the GCR as road closures and diversions are sequentially implemented over 7 sections, with different diversions of varying duration, over 147 days. Mitigation measures are proposed including signage, flagmen, a TMP and diversions etc, with residual effects predicted to be temporary slight negative. Given the overall duration of works (18-24mts), the minor nature of the local and regional roads, the rural nature of the environment and the considerable increase in traffic, including HGV traffic, I consider that the residual impacts on the local and regional roads (west of the Shannon) on approach to the site, will be significant from the perspective of the local population. However, I consider that the arrangements for the management of same are reasonable, and that the temporary nature of the impacts associated with the construction of a development of this nature are acceptable. I note that a concern raised in the observations to the appeal was that the impact of forestry or felling traffic was not considered in the assessment of traffic impacts however I am satisfied that Trip generation associated with tree felling was considered as a factor and this evident in Tables 15-7 & 15-9 of the EIAR.

Source of construction materials

18.302. The PA and parties to the appeal raised concerns in relation to the source of aggregate materials and ready-mix concrete required in the construction of the proposed development. This was based on the identification in the EIAR of a particular quarry approx. 5km west of the proposed development site, near Broadford, Co. Clare. The PA expressed a view that there was no such existing authorised facility at this location which could supply the construction of the proposed development and that,

therefore, there was uncertainty as to the source of such materials and a question in relation to the assessment of the traffic impacts associated with same. The applicant has responded that all stone material required to construct the proposed development will be sourced on site from the cut exercise and onsite borrow pit. Under a precautionary scenario the applicant responds that minor quantities of specific stone or hardcore types maybe required and these materials together with ready mix concrete, will be sourced from nearby appropriately licensed quarries. For the purposes of the EIAR, it was assumed that these minor quantities of stone, together with ready-mix concrete deliveries, will be delivered to the site via one of two routes, either the TDR or the R466 from the west in the direction of Broadford and the quarry identified was for the purposes of modelling this scenario/route as opposed to a confirmed source.

18.303. I am satisfied that the identification of a particular quarry in the EIAR for the purposes of modelling and assessment of traffic related impacts does not raise a material deficit in the assessment, irrespective of its planning or licensing status. I am satisfied that the required aggregate material will be primarily sourced on site, and that any aggregate deliveries to the site will be comparatively minor. I am satisfied with the premise that the applicant will use only an authorised, licensed source for materials including ready-mix concrete and that any alternative scenario is not a material consideration in the determination of this appeal, but a separate matter in respect of which the PA has recourse to enforcement procedures. In my view the salient issue is that the applicant has clearly assessed two proposed delivery route options to the site and considered the capacity and traffic impacts associated with same. In this regard, the impacts will primarily arise in relation to the intense 7-day period during which the concrete pours will take place, and as the capacity of regional and locals (west of the Shannon) has been confirmed, and the impact on the capacity of other roads is minimal and short term I am satisfied that no significant effects will arise and that the assessment of slight temporary short term negative effects is appropriate.

Road Safety Audit

- 18.304. A concern was identified in the observations to the appeal, that the junction of in Kilbane Village was not included in the Stage 1 Road Safety Audit (Appendix 15-4). I note that it is proposed to widen the L7080 from the junction in Kilbane Village to the subject site over a distance of 2km to facilitate construction works, with the road width returning to a similar carriageway width post completion of works. Notwithstanding that these works are temporary and will be in part reversed, a change is proposed to the local road layout. Having regard to TII document 'Road Safety Audit Guidelines' (GE-STY-01027), I note that RSA's on local roads is considered best practice, and that audits should be carried out for a development scheme which results in a change to the road or roadside layout. I am therefore of the view that the widening of local L7080 from the junction in Kilbane Village for a distance of 2km to the subject site should be subject to RSA. If the proposed development proceeds to construction a Stage 2 RSA will be required at detailed design stage. Therefore, if the Board is minded to grant planning permission, I recommend that a condition is attached requiring a Stage 2 RSA which includes the proposed junction and road widening works to local road L7080.
- 18.305. The PA also opined that the impacts of the proposed development on pedestrians and cyclists, particularly in the context of the ECW, was not adequately assessed, however I note that this issue was identified as problem (2.1) in the RSA with the recommended design response of rigorous temporary traffic management measures including the presence of "Flagmen" accepted by the audit team. I am therefore satisfied that this safety issue was identified and assessed with the appropriate response included in the TMP mitigation measures.
- 18.306. The design of the proposed 4 no. access junctions to the site from L-7080 are fully subjected to Stage 1 RSA. In this regard I note that visibility splays of a minimum of 2.4m x 70m are provided at Junctions B, C & D in accordance with the design speed and the technical requirements of the CCDP, Appendix 1, Development Management Guidelines. In this regard I

note that the accesses will be managed by “Flagmen” at construction stage, and that operational traffic will be minimal. At Junction A, visibility splays of 50m to the west and 90m to the east are available from a reduced set back distance of 2m at the operational stage. This was identified as a problem (2.2) in the RSA. The design response states that at construction stage this access will be managed by “Flagmen” and at operational stage the visibility splays are considered to be appropriate for a design speed of 42kph (to the west) as a result of a bend which provides a speed reducing feature. I note that this response is accepted by the audit team, that the Road Design Office of CCC considers the visibility to be acceptable and that the relaxation is permitted by NRA DMRB.

Other Issues

18.307. I note that the PA opined that the concrete pours associated with the foundations for the proposed turbines appeared to be ‘low’ or underestimated, however I am satisfied that this appears to be a simple misinterpretation of the data presented in the EIAR by the PA, and that there was no under-reporting of the trip generation associated with this Stage 1 construction activity. The PA was otherwise of the view that cumulative impacts were not adequately assessed, particularly with regards to impacts on residential amenities. I am satisfied however that the cumulative impacts of the proposed development with respect to traffic have been satisfactorily identified and assessed as ranging from negative, short-term and slight to moderate in the event that there is concurrent construction with another windfarm development in the area and an overlap of traffic generation. I consider that this is unlikely to occur concurrently for the full duration of construction works, but in the event that it does that mitigation measures are adequate and orderly scheduling can be controlled by the LA and an Garda Siochana in the approval of respective TMP’s and arrangements for the movement of abnormal loads.

18.308. Conclusion: Direct and Indirect Effects (*Traffic*)

18.309. Having regard to my assessment of the proposed development on traffic, it is considered that there will be an increase on traffic on the road

network in the area of the site during construction works. Significant direct, indirect and cumulative effects will largely be avoided by design and management of construction in accordance with a CEMP and TMP, which can be agreed with the relevant local authority and An Garda Siochana in advance of construction. Residual effects will most be short-term, temporary, slight and negative. However, I consider that residual short term, significant effects will arise for motorised and non-motorised traffic on the local and regional roads west of the Shannon for the 18-24mts construction period. I consider that the arrangements for the management of same are reasonable, and that the temporary nature of the impacts associated with the construction of a development of this nature are acceptable.

18.310. Material Assets – Telecommunications, Aviation and other material assets.

18.311. Issues Raised

18.312. Shannon Airport Authority (“SAA”) raise some concerns in relation to potential impacts on instrument flight procedures and NAVAIDS/radar systems and concludes with recommended conditions in relation to the IAA Electronic Air Navigation Obstacle Dataset, Visual Aids for Denoting Obstacles and pre-commencement approval of crane activity. The Irish Aviation Authority (“IAA”) recommends that in the event that planning permission is granted, conditions are attached in relation to aeronautical obstacle warning lights, as constructed co-ordinates and pre-commencement notification of crane operations. Telecommunications and Aviation was not a material consideration in the decision of the PA to refuse planning permission.

18.313. Examination of the EIAR

Context

18.314. Chapter 15 of the EIAR deals with Telecommunications, Aviation and other material assets. A statement of authority is provided. A summary of the

scoping and consultation exercise is set out in Section 15.2.2 and 15.2.4 which included consultation with telecommunications operators and ComReg, aviation and other statutory bodies and departments. A full description is set out in Section 2.7 of Chapter 2. Relevant Appendices are:

- Appendix 15-5 Protocol Agreement
- Appendix 15-6 Aviation Review Statement

Baseline

18.315. As a large structure wind turbines have the potential to interfere with broadcast signals by acting as a barrier or causing a degree of scattering to microwave links with the most significant effect caused by the moving rotor and when directly in line with transmitter radio paths. Wind turbines can also affect other signal types used for communication and navigational systems including tower to tower microwave communication links and airborne and ground radar. Interference with radar systems occurs when turbines are located close to an airport or directly in line with the instrument landing approach. The closest large operational large international airport is Shannon Airport in Co. Clare approx. 27.5km southwest of the proposed windfarm. The nearest operational airfield is Erinagh Airfield in Co. Tipperary approx. 26.9km to the east. It is considered that both the airport and airfield are outside the range at which such issues would be expected.

18.316. No significant issues have been identified with regard to electricity lines, cables, utilities or services within the proposed windfarm site. Whilst these assets do occur within, along and over the proposed GCR the project has been designed to avoid health & safety risks and a congestion of existing and proposed services which will otherwise be regulated by Road Opening Licences. A Waste Management Plan (WMP) has been prepared which prioritises prevention and minimisation by recycling, recovery and reuse with disposal to a Materials Recovery Facility (MRF) by a fully licensed waste contractor as a last resort. Full details are included in the CEMP.

Potential Effects

18.317. Consultation was carried out with local and national broadcasters and mobile phone operators in accordance with WEDG 2006 and dWEDG 2019 as summarised in Table 15-29. Virgin Media, on receipt of further information, confirmed there would be no impact from the proposed development on any Virgin Media radio links. RTE Transmission Network advised that there is one path in the area where the proposed windfarm is located. In response the applicant has prepared a Protocol Document (Appendix 15-5) which ensures that appropriate mitigation is carried out in the event of unanticipated broadcast interference to RTE television or radio. Turbine T07 was relocated to avoid potential interference with one identified Eir link, with Eir confirming that the relocated turbine is outside of the clearance distance from the link identified. No impact was determined on a Three Ireland Ltd microwave link as the nearest turbines (T05 & T07) were outside the required clearance distance.

18.318. Consultation was carried out with the IAA, the Department of Defence and the Irish Defence Forces (Air Corps) with regard to dWEDG 2019 and the Irish Air Corps (IAC) position paper 'Air Corps Wind Farm/Tall Structures', 2014. A response was not received from the DoD or IAC. During consultations the IAA raised specific concerns in relation to the safeguarding of Instrument Flight Procedures (IFP's), Instrument Landing Systems (ILS), Flight Checks and Navigation Aids (NAVAIDs) serving Shannon Airport. In their concluding consultation response IAA indicated no impacts on IFPs or NAVAIDs for Shannon Airport. IAA did note however that the proposed wind farm is within 15km of the Woodcock Hill Secondary Surveillance Radar and therefore requires a radar impact study.

18.319. In response to the IAAs scoping reply the applicant prepared an Aviation Review Statement ("ARS"), carried out by AI Bridges and included as Appendix 15-6. Of the ten sections identified in the ARS for review, only the Radar Surveillance Systems section identified any impact requiring further investigation. Detailed technical assessment was not considered necessary for the PSR and SSR radar stations at Shannon Airport due to separation

distance (28.2km), but was considered necessary for the Woodcock Hill MSSR 13.9km southwest of the proposed windfarm. The results of this detailed technical safeguarding assessment (TSA) are included in Appendix E of the ARS and are summarised as follows. The TSA concludes that whilst a Radar Line of Sight (RLoS) does exist between the proposed wind farm and the Woodcock Hill MSSR, false targets due to bistatic reflections from the turbine towers will not occur and the volumes of shadow regions from the proposed turbines are relatively small, considered operationally tolerable and therefore no mitigation measures are necessary. The permitted Carrownagowan and Fahy Beg wind farms were considered the assessment of potential cumulative operational effects. The TSA notes that as both the aforesaid windfarms are permitted, there was no required amendments or redesign of IFPs at Shannon Airport and with the proposed development located at a similar distance, impacts would be similar. The TSA does not foresee any operational problems will be caused through cumulative effects and the ARS determines that the proposed wind farm will not have an impact on aviation in the area to any degree that may be deemed unsafe or inconvenient to users.

- 18.320. The EIAR identifies the potential for a range of environmental effects on telecommunications and aviation. The likely significant effects (potential direct, indirect and cumulative) as identified in the EIAR, are summarised in Table TA1 below:

Table TA1: Summary of potential effects (*Telecommunications and Aviation*)

Project Phase	Potential Effects
Do Nothing	No change to existing telecommunications and aviation operations. Waste volumes would not be generated and the opportunity to generate renewable energy would be lost.
Construction Phase	<i>Telecommunications & Aviation</i> The potential for electromagnetic interference from wind turbines occurs only during the operational phase. No impacts at construction phase. <i>Other Material Assets</i>

	The construction of the project is considered unlikely to impact above ground or underground built services. The proposed GCR has been designed to avoid services with no potential to give rise to effects.
Operational Phase	<i>Telecommunications</i> • Mitigation by design (relocation of Turbine T07 & sufficient separation distance) eliminated potential impacts on one Eir Link and one microwave link from Three Ireland Ltd. • Notwithstanding, the presence of turbines could have a potential negative, imperceptible, long-term effect on telecommunications. <i>Aviation</i> • The ARS identifies that the proposed windfarm will have little to low impact on aviation, with further assessment only required in respect of radar surveillance systems. • The subsequent TSA determined that the proposed windfarm will have no operational effects on aviation, including from a cumulative perspective and that there will be no impact on IAC activity. • With all of these aspects considered as one, the impact of the proposed windfarm on aviation is assessed as negative, imperceptible, long-term. <i>Other Material Assets</i> • No operational phase impacts on waste management. • The project will have the potential to produce 145.649MWh of electricity sufficient to supply 33,726 households per year. This is assessed as a positive, moderate, long-term effect.
Decommissioning Phase	<i>Telecommunications & Aviation</i> The potential for electromagnetic interference from wind turbines occurs only during the operational phase. No impacts at decommissioning phase. <i>Other Material Assets</i> Decommissioning will occur in accordance with the decommissioning plan set out in the CEMP. Any impact and consequential effect will be similar to construction phase but to a lesser extent.
Cumulative	<i>Telecommunications & Aviation</i> The other plans and projects considered in the cumulative assessment are described in Chapter 2, Section 2.9 of the EIAR. The assessment focussed on the two closest permitted windfarms (Carrownagowan and Fahy Beg). A technical assessment was carried out for the Carrownagowan Windfarm and the IAA deemed that there would be no adverse impacts on the Woodcock Hill MSSR. Such an assessment was not required for the Fahy Beg windfarm which is closer to the WH MSSR than the proposed windfarm. The TSA for this project concludes that there will be no operational impact at the WH MSSR due to the cumulative effect of nearby turbines. Furthermore, lighting requirements must be agreed with IAA and turbine locations entered into aircraft navigation databases to enable avoidance and on this basis it is concluded that there will be no cumulative effects in relation to telecommunications or Aviation. <i>Other Material Assets</i>

	Other cabling routes connecting to Ardnacrusha 110kV substation were considered including the connections associated with the proposed Knockshavno and permitted Carrownagowan and Fahy Beg wind farms. It is considered that the potential for cumulative effects are not significant, with the timing of works controlled by the ROL process and will not overlap. On this basis cumulative effects are assessed as negative, imperceptible, short-term.
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18.321. Mitigation

18.322. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter. Measures are extensive and in relation to Materials Assets include:

- Aviation Lighting requirements will be met in accordance with IAA and IAC requirements.
- Advance agreement on construction details with IAA and DoD (i.e. crane erection)
- Coordinates and elevations for built turbines supplied to IAA and DoD as is standard practice.
- Specific measures set out in the CEMP to protect services and utilities and for the management of waste.

18.323.

18.324. Residual Effects

18.325. With the implementation of mitigation measures there will be no residual effect on telecommunications. There will be a negative, imperceptible, long-term residual effect on aviation and a negative, imperceptible, short-term residual effect on other material assets. There will be no significant direct or indirect effects.

18.326. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.327. I have examined, analysed and evaluated Chapter 15 of the EIAR, all of the associated documentation and submissions on file in respect of telecommunications, aviation and other material assets. I am satisfied that the applicant’s understanding of the baseline environment is comprehensive and

that the key impacts in respect of likely effects on telecommunications, aviation and other material assets have been identified. No significant issues were raised by parties to the appeal or in the decision of the PA in relation to telecommunications or other material assets. Parties to the appeal did raise aviation safety considerations and I consider that this is principal consideration requiring assessment. I note the statutory report from the SAA of 2nd September 2024 which states that SAA will need to carry out its own internal assessment on the aerodromes obstacle limitation surfaces (OLS), which requires the developer to provide geographical location data expressed in WGS 84 format for all 7 turbines as well as the Above Mean Sea Level (AMSL) ground heights. The report also recommends that the developer contact Air Nav Ireland relating to potential impacts on IFP's and NAVAIDS/radar systems. The SAA report concludes with recommended conditions in relation to inclusion of turbines in the IAA Electronic Air Navigation Obstacle Dataset, visual aids for denoting obstacles, and pre-approval of crane activity. I also note the statutory report from the IAA of 8th October 2024. This report recommends that the developer liaise with Air Nav Ireland to confirm the windfarm, and cranes would have no impact on IFP's, communication, navigation and surveillance at Shannon Airport or other enroute communication, navigation and surveillance equipment. This report concludes with recommended conditions on obstacle warning lights, as constructed WGS-84 coordinates with ground and tip height elevations for each turbine and pre-notification of crane operations.

- 18.328. I note that there was no statutory report on the proposed development from Air Nav Ireland and that the applicant did not consult with same during the pre-planning scoping and consultation exercise. Notwithstanding the statutory reports received from SAA and IAA I note that both reports do not object or use objectionable language to the proposed development and neither identify a specific concern in relation to the proposed development. Both reports recommend standard type conditions in the event that planning permission is granted. In relation to the SAA report and potential impacts on the aerodromes OLS I note that the ARS considered this issue and found that

the turbines at the proposed windfarm would not penetrate the Outer Horizontal Surface which extends to 15km from the Shannon Airport Reference Point (ARP) or runway centre-point and that no further assessment was deemed necessary. Otherwise, I note that the provision of WGS-84 coordinates with ground and tip height elevations is recommended by both reports as a post-consent 'as constructed' condition. In relation to the SAA report and the recommendation that the developer contact Air Nav Ireland with regard to impact(s) on IFP's and NAVAIDS I note that the ARS identified no impacts on IFPs or NAVAIDS for Shannon Airport and that this was accepted by the IAA in the scoping/consultation response. Accordingly, the only remaining aviation assessment consideration is potential impact(s) on the secondary enroute radar surveillance system at Woodcock Hill MSSR. This MSSR was subject to a detailed Technical Safeguarding Assessment (TSA) which concluded, as discussed above, that false targets due to bistatic reflections would not occur and volumes of shadow regions were relatively small, operationally tolerable and that no mitigations measures were considered necessary. This concluding position is consistent with the permitted Fahy Beg and Carrownagowan Windfarms.

18.329. Conclusion: Direct and Indirect Effects (*Material Assets Telecommunications and Aviation*)

18.330. Having regard to the aforesaid, I am satisfied that no significant adverse direct, indirect or cumulative environmental effects will arise from the proposed development on material assets including aviation.

18.331. Environmental Topic: Major Accidents and Natural Disasters

18.332. Issues Raised

18.333. Issues raised by parties to the appeal include safety concerns associated with turbine collapse, blade failure, runaway rotor, thunderstorms and lightning strike, structural failure and ice throw. These issues have been addressed in the section of this report dealing with Population and Human

Health. No other issues were identified by any party to the appeal in respect of Major Accidents and Natural Disasters.

18.334. Examination of the EIAR

Context

18.335. Chapter 16 of the EIAR deals with Major Accidents and Natural Disasters. It assesses the vulnerability of the proposed development to major accidents and/or natural disasters as well as the risk of the project itself causing major accidents and/or natural disasters. It is carried out in accordance with the EIA Directive (2014/52/EU) and the EPA Guidelines on Information to be contained in Environmental Impact Statements (EPA, 2022). The objective is to ensure that appropriate precautionary actions are taken for the proposed project. The assessment methodology is described in Section 16.2 including site specific risk assessment methodology, risk identification and risk classification and the 'risk likelihood ratings' are defined in Table 16.1. A statement of authority is included.

Baseline

18.336. The functional area of Clare County Council falls under the HSE Area 3 Emergency Management Plan, which outlines the following potential site specific risks at the following sites within County Clare:

- Shannon Airport Fuel Terminal
- ESB Moneypoint Power Generating Station
- Roche Ireland, Clarecastle, (*undergoing remediation, not currently operational*)
- ENVA Smithstown Industrial Estate, Shannon
- Avara, Shannon Industrial Estate (*undergoing repurposing, not currently operational*)
- Shannon International Airport
- Shannon Estuary.

As part of the Local Area Climate Action Plan for County Clare (Clare LACAP) a Tier 1 climate change risk assessment was carried out. The site-specific risks (in respect of the abovementioned sites), which are most relevant to this

assessment include: severe weather, flooding, aircraft collision/loss, water contamination, hazmat, rail accident, industrial fire/explosion, loss of critical infrastructure and structural collapse.

18.337. Potential Effects

18.338. The EIAR identifies the potential for a range of environmental effects on telecommunications and aviation. In respect of Shannon Airport and Fuel Terminal, it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 33.5km southwest of the subject site. In respect of ESB Moneypoint Power Generating Station, it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 79.9km southwest of the subject site. In respect of Roche Ireland (pharmaceutical plant) , it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 28km west of the subject site. In respect of ENVA Smithstown Industrial Estate (waste treatment and disposal facility), it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 28.8km southwest of the subject site. In respect of Avara, Shannon Industrial Estate, (pharmaceutical manufacturing, R&D facility) it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 30km southwest of the subject site. In respect of Shannon Airport, it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 27.8km southwest of the subject site. In respect of Shannon Estuary, it is not considered that the identified site-specific risks would impact the proposed project if they were to occur, given the location 16.5km southwest of the subject site.

18.339. The likely significant effects (potential direct, indirect and cumulative) as identified in the EIAR, are summarised in Table MA-ND1 below: (*n.b. risk scores assume all mitigation measures and safety procedures have failed*).

Table MA-ND1: Summary of potential effects (*Major Accidents and Natural Disasters*)

Project Phase	Potential Effects
Do Nothing	No change to land use. The opportunity to harness part of Co. Clare's valuable wind energy resource would be lost together with the opportunity to contribute to national and international renewable energy and GHG emissions reduction targets.
Construction Phase	• Critical Infrastructure Emergency (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Severe Weather (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited • Flooding (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Utility Emergencies (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Traffic Incident (Consequence Rating (1) x Likelihood Rating (3)) = Risk Score of (3) – Serious. • Contamination - Fuel Storage & Handling, General Construction (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. • Fire/Gas Explosion (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Collapse/Damage to Structures (Consequence Rating (2) x Likelihood Rating (1)) = Risk Score of (2) – Limited.
Operational Phase	• Severe Weather (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Flooding (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Contamination (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. • Fire/Gas Explosion (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. • Collapse/Damage to Structures (Consequence Rating (2) x Likelihood Rating (1)) = Risk Score of (2) – Limited. • Traffic Incident (Consequence Rating (1) x Likelihood Rating (3)) = Risk Score of (3) – Serious.
Decommissioning Phase	• Severe Weather (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Flooding (Consequence Rating (1) x Likelihood Rating (2)) = Risk Score of (2) – Limited. • Traffic Incident (Consequence Rating (1) x Likelihood Rating (3)) = Risk Score of (3) – Serious. • Contamination (Consequence Rating (2) x Likelihood Rating (2)) = Risk Score of (4) – Very Serious. • Collapse/Damage to Structures (Consequence Rating (2) x Likelihood Rating (1)) = Risk Score of (2) – Limited.
Cumulative	• No potential for significant in-combination or cumulative effects associated with the potential for the project to be impacted by major accidents or natural disasters. Cumulative residual effect is not significant.

18.340. The scenarios with the highest risk score are identified and discussed below:

- **Contamination during construction, operation and decommissioning.** This risk arises from potential release of hydrocarbons and was given a risk score of 4 (very serious) on a precautionary basis. As outlined in Chapter 8 (8.5.2.4) and 9 (9.5.2.6) of the EIAR, measures will be in place to reduce the risk of accidental spillage and contamination of pollution risk to groundwater, surface water and associated ecosystems and to terrestrial ecology. The risk of contamination is considered 'very unlikely', with 'limited consequences' representing a 'low-risk scenario'. The relevant environmental topic chapters of the EIAR conclude that there will be no significant residual effect with this potential impact.
- **Fire/Explosion during construction, operation and decommissioning.** There is a potential risk of fire/explosion at the proposed project. However, the project will be designed, built and operated in line with best practice and will be subject to a fire safety risk assessment which will identify major risks of fire and mitigation of same.
- **Collapse/Damage to Structures during the construction phase.** There is potential for damage or collapse to the Blackwater Bridge during the construction of the proposed GCR. This work will proceed by strapping the cable to the side of the bridge under the supervision of a project archaeologist with works by a suitably qualified contractor and will be subject to a pre-commencement survey with the LA Heritage Department. All mitigation measures outlined in Appendix 4-3 and Chapter 14 will be implemented.
- **Traffic accident during the operational phase.** There is potential for traffic accident during the operational phase due to the presence of

maintenance vehicles and private vehicles on public roads and on the Blackwater Bridge where the GCR cable could be disturbed. As is standard practice for ESB infrastructure any interference with the cable will cause power to drop immediately.

18.341. Mitigation

18.342. The EIAR refers to the suite of mitigation measures, embedded within the design and layout of the proposed development and as considered in the EIAR under alternatives. Full Mitigation Measures are set out in Chapter 18 of the EIAR – ‘Schedule of Mitigation & Monitoring’ and also in each topic chapter. Measures are extensive and in relation to Major Accidents and Natural Disasters include:

- Design and build in accordance with best practice.
- Implementation of a Risk Management Plan with emergency planning measures.
- The mitigation measures outlined in Chapter 9 and the CEMP (Appendix 4-3) will avoid or mitigate the risk of contamination, major accident or natural disaster.
- The project will be subject to a fire safety risk assessment which will identify and mitigate any major risks of fire and will be included in the CEMP.

18.343. Residual Effects

18.344. It is considered that when mitigation is implemented there will be no significant residual effects associated with the construction, operation and decommissioning of the project in respect of major accidents or natural disasters.

18.345. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.346. I have examined, analysed and evaluated Chapter 16 of the EIAR and the associated chapters and appendices of the EIAR. I am satisfied that the subject development does not give rise to the risk of significant environmental effects because of its vulnerability to major accidents or natural disasters. The development site is stable with little potential for landslide or floodrisk (see

water section of this report). The risk of lightning is low (see population and human health) and turbines are removed from nearest residential receptors. Risk of fire and electrical faults are considered to be low and managed by on site arrangements to comply with health & safety through the fire safety risk assessment and CEMP.

18.347. Conclusion: Direct and Indirect Effects *(Major Accidents and Natural Disaster)*

18.348. Having regard to the aforesaid, I am satisfied that no significant adverse direct, indirect or cumulative environmental effects will arise from the proposed development or its vulnerability to risks of major accidents and/or natural disaster.

18.349. Environmental Topic: Interaction of Effects

18.350. Issues Raised

No issues were raised by the parties to the appeal in respect of interaction of effects.

18.351. Examination of the EIAR

Context

18.352. Chapters 5 to 16 of the EIAR identify the potential significant environmental effects that may occur in relation to the respective environmental topics. Chapter 17 considers the potential for interaction between these potential significant effects the result of which may exacerbate the magnitude of effects or ameliorate them or have a neutral effect. A matrix is presented in Table 17-1 to identify potential interactions between the various aspects of the development already assessed in the EIAR. A Statement of authority is included. The following key interventions are identified and considered:

- Population and Human Health with: land, soils, geology, water, air quality, climate, noise and vibration, landscape and visual, and material assets;

- Biodiversity with land, soils, geology, water, air quality, climate, noise and vibration;
- Birds with lands, soils, geology, water, air quality, climate, noise and vibration;
- Land, Soils and Geology with water, cultural heritage, landscape & visual, air quality and climate;
- Air Quality with material assets;
- Climate with material assets; and
- Landscape and Visual with cultural heritage.

Potential Effects and Mitigation

18.353. No potential effects are identified as a result of interactions between effects, over and above those already identified in the individual chapters of the EIAR, and no additional mitigation measures are proposed.

18.354. Residual Effects

18.355. No residual effects are identified as a consequence of interaction of environmental factors.

18.356. Analysis, Evaluation and Assessment: Direct and Indirect Effects

18.357. No issues have been raised by any party to the appeal in respect of interaction of effects or environmental factors. I have examined, analysed and evaluated Chapter 17 of the EIAR and the associated chapters and appendices. I am satisfied that the main interactions have been identified and assessed and that there is no potential for any significant direct, indirect or cumulative effects arising from the interaction of impacts, effects or environmental factors as a result of the proposed development and which have not already been addressed within the EIAR.

18.358. Conclusion: Direct and Indirect Effects (*Interaction of Impacts*)

18.359. Having regard to the foregoing, I am satisfied that no significant adverse direct, indirect or cumulative environmental effects will arise from the interaction of impacts, that have not already been addressed in the EIAR.

19.0 Reasoned Conclusions

19.1. Having regard to the examination of environmental information contained above, and in particular to the EIAR and supplementary information provided by the developer, and the submission from the Planning Authority, prescribed bodies and observers in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment, with the implementation of proposed mitigation measures are:

Population and Human Health:

- Long-term significant positive impact on Renewable Energy Production and Reduction in Greenhouse Gas Emissions.
- A minor significant effect at BNAL06 for BESS operational noise where the rating level exceeds the background sound level by a maximum of +3dB during the nighttime.

Noise:

- A minor significant effect at BNAL06 during the nighttime as result of predicted BESS noise levels. This effect will be mitigated by the fact that the exceedance remains below the BS 4142 threshold indicating a potential 'adverse' effect and by the actual (lesser) operating noise conditions as opposed to the worst-case scenario in the noise modelling carried out.

Landscape & Visual:

- Significant landscape and visual effects will occur in respect of regional road R466 and Scenic Road SR26 as represented by **VP04 (Scenic Route SR26 Cloonyconry More)**, the East Clare Way as represented by **VP13 (Killeagy/ECW)**, and from a small number of local residential receptors in the immediate area of the site including Kilbane village, as represented by **VP14: (Kilbane)**. These effects will be mitigated by a combination of topography, screening, distance, set back distances and design etc. however significant residual effects will remain.

Traffic:

- Short term, residual significant effects will arise for motorised and non-motorised traffic on the local and regional roads west of the Shannon for the 18-24mts construction period. I consider that the arrangements for the management of same are reasonable, and that the temporary nature of the impacts associated with the construction of a development of this nature are acceptable.

19.2. Notwithstanding the conclusion reached in respect of the inability of the proposed measures to fully mitigate these impacts, it is considered that the environmental effects would not justify a refusal of planning permission having regard to the overall benefits of the proposed development and the pressing need to dial up renewable energy sources (including onshore wind) and reduce GHG emissions.

20.0 Appropriate Assessment

20.1. Screening Determination

Finding of likely significant effects

20.2. In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of the information provided by the applicant, I conclude that the proposed development could result in significant effects on Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Wood SAC (001013) and Lower River Shannon SAC (002165) in view of the sites conservation objectives and a number of qualifying interests of those sites. It is therefore determined that Appropriate Assessment (Stage 2) [under Section 177V of the Planning and Development Act, 2000 (as amended) of the proposed development is required.

20.3. Appropriate Assessment Conclusion: Integrity Test

20.4. In screening the need for Appropriate Assessment, it was determined that the proposed development could result in significant effects on Lough Derg

(Shannon) SPA, River Shannon and River Fergus Estuaries SPA, Glenomra Woods SAC AND Lower River Shannon SAC in view of the conservation objectives of those sites and that Appropriate Assessment under the provisions of S177U was required.

20.5. Following an examination, analysis and evaluation of the NIS, all associated material submitted, and taking into account observations on nature conservation, I consider that adverse effects on site integrity of the Lough Derg (Shannon) SPA, River Shannon and River Fergus Estuaries SPA, Glenomra Woods SAC and Lower River Shannon SAC can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

20.6. My conclusion is based on the following:

- Detailed assessment of construction, operational and decommissioning impacts.
- The respective site-specific conservation objectives, targets, attributes, QI's and SCI's of the respective European Sites as detailed and assessed in my Stage 2 AA as appended to this report (Appendix 2).
- The proposed development will not affect the attainment of conservation objectives for the Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Wood SAC (001013) or the Lower River Shannon SAC (002165) or prevent or delay the restoration of favourable conservation condition for Cormorant or Common Tern (Lough Derg (Shannon) SPA), or Sea Lamprey, Atlantic Salmon, Atlantic Salt Meadows, Otter, Mediterranean Salt Meadows, Alluvial Forests with *Alnus Glutinosa* and *Fraxinus excelsior* (Lower River Shannon SAC) .
- Effectiveness of mitigation measures proposed in relation to water quality, tree felling, earthworks and construction activities, borrow pit, settlement ponds, hydrocarbons, cement products, wastewater and morphological changes to watercourses which are primarily captured within the CEMP and which will govern the construction of the project under the supervision of an

appropriately qualified project ecologist with supporting hydrological engineer.

21.0 Recommendation

21.1. I recommend that permission for the development be granted subject to conditions.

22.0 Reasons and Considerations

22.1. The Board performed its functions in relation to the making of its decision, in a manner consistent with Section 15(1) of the Climate Action and Low Carbon Act 2015, as amended by Section 17 of the Climate Action and Low Carbon Development (Amendment) Act 2021, (consistent with Climate Action Plan 2024 and Climate Action Plan 2025 and the national long term climate action strategy, national adaptation framework and approved sectoral adaptation plans set out in those Plans and in furtherance of the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State), and otherwise had regard to:

- (a) the National Biodiversity Action Plan 2023-2030
- (b) National policy with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases,
- (c) the provisions of the Wind Energy Development Guidelines – Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June 2006,
- (d) the policies set out in the Regional Spatial and Economic Strategy of the Southern Regional Assembly,
- (e) the policies of the planning authority contained within the Clare County Development Plan, 2023-2029,

- (f) the character of the landscape in the area of the site and in the wider area of the site,
- (g) the pattern of the existing and permitted development in the area,
- (h) The distance between the turbines and surrounding dwellings and other sensitive receptors from the proposed development,
- (i) The Environmental Impact Assessment Report submitted,
- (j) The Natura Impact Statement submitted,
- (k) The submissions and observations made in connection with the planning application,
- (l) The report of the Inspector.

Appropriate Assessment - Stage 1

The Board considered the Screening Report for Appropriate Assessment, the Natura Impact Statement and all the other relevant submissions and carried out both an appropriate assessment screening exercise and an appropriate assessment in relation to the potential effects of the proposed development on designated European Sites. The Board agreed with and adopted the screening assessment and conclusion carried out in the Inspector's report that the following European sites in respect of which the proposed development has the potential to have a significant effect are Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Wood SAC (001013) and the Lower River Shannon SAC (002165)).

Appropriate Assessment – Stage 2

The Board considered the Natura Impact Statement and associated documentation submitted with the application, the mitigation measures contained therein, the submissions and observations on file, and the Inspector's assessment. The Board completed an appropriate assessment of the implications of the proposed development for the European site for which potential to have a significant effect had been identified, in view of the site's conservation objectives. The Board considered that the information before it

was adequate to allow the carrying out of an appropriate assessment. In completing the appropriate assessment, the Board considered, in particular, the following:

- i. the likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,
- ii. the mitigation measures which are included as part of the current proposal, and
- iii. the conservation objectives for the European Sites.

In completing the Appropriate Assessment, the Board accepted and adopted the Appropriate Assessment carried out in the Inspector's report in respect of the potential effects of the proposed development on the aforementioned European Sites, having regard to the site's Conservation Objectives. In overall conclusion, the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the sites' Conservation Objectives.

Environmental Impact Assessment

The Board completed an environmental impact assessment of the proposed development taking into account:

- The nature, scale and extent of the proposed development,
- The environmental impact assessment report and associated documentation submitted in support of the application,
- The submissions from the Planning Authorities, prescribed bodies and observers, and
- 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 application.

The Board considered, and agreed with the Inspectors reasoned conclusions, that the main significant direct and indirect effects of the proposed development on the environment are as follows:

- Population and Human Health. Long-term significant positive impact on Renewable Energy Production and Reduction in Greenhouse Gas Emissions. A minor significant effect at BNAL06 for BESS operational noise where the rating level exceeds the background sound level by a maximum of +3dB during the nighttime.
- Noise. A minor significant effect at BNAL06 during the nighttime as result of predicted BESS noise levels. This effect will be mitigated by the fact that the exceedance remains below the BS 4142 threshold indicating a potential 'adverse' effect and by the actual (lesser) operating noise conditions as opposed to the worst-case scenario in the noise modelling carried out.
- Landscape & Visual. Significant landscape and visual effects will occur in respect of regional road R466 and Scenic Road SR26 as represented by VP04 (Scenic Route SR26 Cloonyconry More), the East Clare Way as represented by VP13 (Killeagy/ECW), and from a small number of local residential receptors in the immediate area of the site including Kilbane village, as represented by VP14: (Kilbane). These effects will be mitigated by a combination of topography, screening, distance, set back distances and design etc. however significant residual effects will remain.
- Traffic. Short term, residual significant effects will arise for motorised and non-motorised traffic on the local and regional roads west of the Shannon

for the 18-24mts construction period. The arrangements for the management of same are reasonable, and the temporary nature of the impacts associated with the construction of a development of this nature are acceptable.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed, as set out in the Environmental Impact Assessment Report and, subject to compliance with the conditions set out herein, the effects on the environment of the proposed development by itself and cumulatively with other development in the vicinity would be acceptable. In doing so the Board adopted the report and conclusions of the reporting Inspector.

Proper Planning and Sustainable Development

It is considered that, subject to compliance with the conditions set out below, the proposed development would be in accordance with the Climate Action and Low Carbon Development Act 2015 (as amended), CAP24 and CAP25, National Biodiversity Action Plan 2023-2020, the National Planning Framework (First Revision), the Regional Spatial and Economic Strategy of the Southern Region 2020-2032 and the provisions of the Clare County Development Plan, 2023-2029. It would:

- make a positive contribution to Ireland's national strategic policy on renewable energy and its move to a low energy carbon future,
- not seriously injure the residential amenities of the area,
- not adversely affect population & human health, natural heritage, biodiversity, cultural heritage or tourism,
- not have an unduly adverse impact on the landscape, and
- would be acceptable in terms of traffic safety, aviation and convenience.

The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area

23.0 Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the planning application, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to the commencement of development and the proposed development shall be carried out and completed in accordance with the agreed particulars.

Reason: In the interest or clarity.

2. The period during which the development hereby permitted may be carried out shall be ten years from the date of this Order.

Reason: Having regard to the nature and extent of the proposed development, the Board considered it appropriate to specify a period of validity of this permission in excess of five years.

3. The permission shall be for a period of 35 years from the date of the commissioning of the wind turbines. The wind turbines and related ancillary structures shall then be decommissioned and removed unless, prior to the end of the period, planning permission shall have been granted for their continuance for a further period.

Reason: To enable the relevant planning authority to review the operation of the wind farm in the light of the circumstances then prevailing.

4. The following design requirements shall be adhered to:
 - (a) The wind turbines shall be designed with a hub height ranging from 102.5 metres to 105 metres, a rotor blade diameter from 149 metres to 155 metres, and blades that result in an overall tip height of 179.5 metres to 180 metres, in accordance with the turbine parameters assessed in the environmental impact assessment report and Natura Impact Statement, together with application documentation. Prior to the commencement of development, the applicant

shall confirm the actual detail of the turbines to which this condition relates to the Planning Authority.

- (b) The wind turbines, including masts and blades, shall be finished externally in a light grey colour.
- (c) The meteorological mast shall be no more than 36.5m high.

Reason: In the interest of clarity and visual amenity

- 5. (a) The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Assessment (EIAR), and associated documents are implemented in full in conjunction with the timelines therein, except as may be otherwise required in order to comply with the following conditions.
- 6. (b) The developer shall ensure that all construction methods and environmental mitigation measures set out in the Natura Impact Statement (NIS) and associated documents are implemented in full in conjunction with the timelines therein, except as may be otherwise required in order to comply with the following conditions.

Reason: To protect the environment and the integrity of European sites.

- 7. Prior to the commencement of development, details of external finishes to substation buildings, BESS and all associated structures, including security fencing, CCTV and interface mast, shall be submitted to the planning authority for written agreement.

Reason: In the interest of clarity and visual amenity.

- 8. No haulage of stone or timber vehicles is permitted on the L-7004 Kilbane to Broadford Road or on the L-7080 from the windfarm site through the 'Gap Road' to Killaloe.

Reason: In the interests of traffic safety.

9. Prior to the commencement of development, the following shall be submitted to the Planning Authority for written agreement:

- (a) A Stage 2 Road Safety Audit (RSA) in accordance with TII requirements, which shall include all site entrances (permanent and temporary) and the proposed widening and upgrade of Local Road L7080 (Gap Road) from Kilbane Village to the subject site.
- (b) Details of road improvement and strengthening works along the L-3022 and the L-7080, including arrangements for reinstatement of roadside vegetation and landscaping.
- (c) Details of lane width re-instatement works on the R466 and full junction reinstatement works where openings and changes of direction are proposed.
- (d) Details of pre and post construction condition survey of proposed haul routes, bridges/structures along the route, weight of abnormal loads, and arrangements for maintenance of routes/structures during construction and repair of any damage.
- (e) A revised detailed Construction Traffic Management Plan, to include arrangements for the management of construction traffic on the public road, arrangements for alternative routes, details of source and volume of aggregate material to be sourced on/off site, haul routes, phasing programme for construction works (including with other wind farms), and means to keep the public road free of dirt and debris.

Reason: In the interest of visual amenity and traffic safety.

10. The delivery of large-scale turbine components for the construction of the wind farm shall be managed in accordance with a finalised Traffic Management Plan, which shall be submitted to, and agreed with the planning authority prior to the commencement of development. This plan shall provide details of the road network to be used by construction traffic, including oversized loads, and detailed arrangements for the protection of bridges, culverts and other structures to be traversed, as may be required. The plan

shall also contain details of how the developer intends to engage with relevant parties and notify the local community in advance of the delivery of oversized loads. Any proposed works to the national road network to facilitate turbine delivery shall comply with the requirements of TII.

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

11. The developer shall retain the services of a suitably qualified and experienced Ecologist (to perform the role of Ecological Clerk of Works) to undertake pre-construction surveys at the various project elements, immediately prior to commencing work to check for the presence of protected species in the vicinity, and to oversee and ensure the implementation of all environmental mitigation and monitoring measures during construction and operation of the wind farm.

Reason: To protect biodiversity.

12. The developer shall retain the services of a suitably qualified and experienced bat and bird specialists to undertake appropriate bat and bird surveys of the site, in accordance with the mitigation and monitoring arrangements set out in the Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS). Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Housing, Local Government and Heritage.

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

13. The construction of the proposed development shall be managed in accordance with a final Construction and Environmental Management Plan,

which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

- (a) The CEMP shall include but not be limited to operational controls for dust, noise and vibration, waste management, protection of soils and groundwaters and surface waters, protection of flora and fauna, site housekeeping, emergency response planning, site environmental policy, waste management, project roles and responsibilities.
- (b) The CEMP shall include the location of any and all archaeological or cultural heritage constraints relevant to the proposed development and shall clearly describe all identified likely archaeological impacts, both direct and indirect and all mitigation measures to be employed to protect the archaeological or cultural heritage environment during all phases of site preparation and construction activity.
- (c) Works near watercourses shall be carried out in consultation with and in accordance with IFI standards Guidelines on the Protection of fisheries during Construction work in and adjacent to Waters (IFI, 2016) and IFI shall be given at least 1 weeks advance notice of felling operations at the site.
- (d) The CEMP shall include a draft decommissioning plan for the turbines, to include reuse and/or recycling of turbine components. A revised plan shall be submitted and agreed in advance of decommissioning.

Reason: In the interest of environmental protection and residential amenity.

14. Commissioning and construction works shall be limited to the hours of between 0700 hours and 1900 hours Monday to Friday and 0800 hours and 1400 hours on Saturday and shall not be permitted on Sundays or public holidays.

Reason: To protect the amenities of nearby residential properties.

15. The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed:

(a) For the daytime period of 0700 to 2300, in quiet environments, where background noise is less than 30dB(A)L90 T10, a maximum noise level of 40dB(A)L90 T10.

(b) For daytime periods of 0700 to 2300 where background noise level exceeds 30dB(A)L90 T10, the greater of 5 dB(A) above background noise levels, or 45 dB(A)L90 T10.

(c) 43 dB(A)L90 T10 at all other times.

Reason: In order to protect the amenities of noise sensitive properties in the vicinity of the development.

16. Prior to the commissioning of the windfarm, the developer shall submit to and agree in writing with the planning authority a Noise Compliance Monitoring Programme (NCMP). The NCMP shall include a detailed methodology for all sound measurements, including frequency of monitoring (initially six months, with confirmatory monitoring in the third-year post commissioning) and recording of results, which shall be made publicly available. The NCMP shall also include any mitigation measures such as the de-rating of particular turbines if required and shall be fully implemented during the operation of the windfarm.

Reason: In order to protect the amenities of noise sensitive properties in the vicinity of the development.

17. (a) Appropriate software shall be employed on each of the turbines to ensure that there will be no shadow flicker at any existing nearby dwelling. Turbine shutdown shall be undertaken by the wind energy developer or operator in order to eliminate the potential for shadow flicker.

- (b) A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority indicating compliance with the above shadow flicker requirements at dwellings. Within 12 months of the commissioning of the wind farm, this report shall be prepared and submitted to, and agreed in writing with, the planning authority. The developer shall outline proposed measures to address any recorded non-compliances, controlling turbine rotation if necessary. A similar report may be requested by the planning authority at reasonable intervals thereafter.

Reason: In the interest of residential amenity

18. In the event that the developer does not utilise the government's Renewable Energy Support Scheme (RESS), prior to the commencement of development, a community gain proposal shall be submitted to the planning authority for written agreement. In default of agreement, the matter shall be referred to An Bord Pleanála for determination.

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

19. In the event that the proposed development causes interference with telecommunication signals, effective measures shall be introduced to minimise interference with telecommunication signals in the area. Details of these measures, which shall be at the developer's expense, shall be submitted to and agreed in writing with the planning authority prior to the commissioning of the turbines and following consultation with relevant authorities.

Reason: In the interest of protecting telecommunication signals and residential amenity.

20. (a) Prior to commencement of development and following consultation with

the Department of Defence and Irish Aviation Authority, the developer shall submit for written agreement of the planning authority, details of an aeronautical obstacle warning light scheme.

- (b) Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as constructed tip heights and WGS-84 format co-ordinates of the turbines and wind monitoring mast together with ground and tip height elevations at each turbine location.
- (c) The developer shall notify Shannon Airport Authority, Air Nav Ireland and the Irish Aviation Authority of the intention to commence crane operations at least 30 days prior to their erection in accordance with S.I. 215 of 2005 Irish Aviation Authority (Obstacles to Aircraft in Flight) Order.

Reason: In the interest of aviation safety.

21. All mitigation measures in relation to Archaeology as set out in Chapter 14 of the Environmental Impact Assessment Report (EIAR) shall be implemented in full, except as maybe otherwise required in order to comply with the archaeological conditions of this permission. The applicant shall retain/engage a suitably qualified Archaeologist (licensed under the National Monuments Acts) to:

- (a) Carry out pre-development archaeological testing in areas of proposed ground disturbance, including but not limited to, turbine base locations, hardstands, roads, compounds, onsite 38kV substation compound and all other ground disturbance required for the development. No groundworks may take place in the absence of the Archaeologist without his/her express consent.
- (b) Submit an archaeological impact assessment report for the written agreement of the Planning Authority, following consultation with the National Monuments Service of the Department, in advance of any site

preparation works or groundworks, including site investigation, works/topsoil stripping/site clearance/enabling works and construction works. The report shall include an archaeologist impact statement and mitigation strategy. Where archaeological material is shown to be present, avoidance, preservation *in situ*, preservation by record (archaeological excavation) and/or monitoring may be required.

- (c) No site preparation and/or construction works shall be carried out on site until the Archaeologists report has been submitted to and approval to process is agreed in writing with the Planning Authority. All resulting and associated archaeological costs shall be borne by the developer.

Reason: To ensure the continued preservation (either in situ or by record) of places, caves, sites, features or other objects of archaeological interest.

22. The applicant shall retain/engage a suitably qualified Archaeologist (licensed under the National Monuments Acts) to:

- (a) Carry out Archaeological Monitoring of all site clearance works, topsoil stripping and groundworks associated with the development. The use of appropriate machinery to ensure the preservation and recording of any surviving archaeological remains shall be necessary. No groundworks may take place in the absence of the Archaeologist without his/her express consent.
- (b) Should archaeological remains be identified during the course of Archaeological Monitoring, all works shall be suspended in the area of archaeological interest pending a decision of the Planning Authority, in consultation with the National Monuments Service of the Department, regarding appropriate mitigation (*preservation in situ/excavation*).
- (c) The developer shall facilitate the Archaeologist in recording any remains identified. Any further archaeological mitigation requirements specified by the Planning Authority following consultation with the National Monuments Service of the Department, shall be complied with by the developer.

- (d) Following the completion of all archaeological work on site and any necessary post-excavation specialist analysis, the Planning Authority and the National Monuments Service of the Department shall be furnished with a final archaeological report describing the results of the monitoring and any subsequent required archaeological investigative work/excavation required. All resulting and associated archaeological costs shall be borne by the developer.

Reason: To ensure the continued preservation (either in situ or by record) of places, caves, sites, features or other objects of archaeological interest.

23. On full or partial decommissioning of the wind farm, or if the wind farm ceases operation for a period of more than 1 year, the turbines and all decommissioned structures shall be removed, and foundations covered with soil to facilitate revegetation. These reinstatement works shall be completed to the written satisfaction of the planning authority within three months of decommissioning or cessation of operation.

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

24. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site, coupled with an agreement empowering the local authority to apply such security or part thereof to the satisfactory reinstatement of the public road. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: To ensure the satisfactory completion of the development.

25. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of the site upon cessation of the project, coupled with an agreement empowering the local authority to apply such security or part thereof to secure such reinstatement. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: To ensure the satisfactory completion of the development.

26. The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000, as amended. The contribution shall be paid prior to commencement of development or in such phased payments as the planning authority may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. Details of the application of the terms of the Scheme shall be agreed between the planning authority and the developer or, in default of such agreement, the matter shall be referred to An Bord Pleanála to determine the proper application of the terms of the Scheme.

Reason: It is a requirement of the Planning and Development Act 2000, as amended, that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to the permission.

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.

Paul Kelly
Senior Planning Inspector

14th May 2025

Appendix 1: AA Screening Determination

Test for likely significant effects (ABP 321285-24)

Screening for Appropriate Assessment Test for likely significant effects	
Step 1: Description of the project and local site characteristics	
Case File: ABP 321285-24	
Brief description of project	Normal Planning Appeal Construction of 7 wind turbines, onsite 38kv substation, BESS, meteorological mast, temporary construction facilities and all associated site works. See section 3.0 of Inspectors Report.
Brief description of development site characteristics and potential impact mechanisms	It is proposed to construct a wind farm development on land that is currently primarily commercial forestry and agricultural. A detailed description is provided in Section 3.0 of the inspector's report and detailed specifications of the proposal are provided in the AA screening report, NIS, EIAR and other planning documents provided by the applicant. In summary the wind farm development has a total development footprint of 8.4ha and includes 7no. wind turbines with a blade tip height range of 179.5m to 180m, a rotor diameter range of 149m to 155m and a hub height range of 102.5m to 105m, 1no. meteorological mast, an on site 38kv substation, a Battery Energy Storage System, underground cabling, access tracks and entrances (new and upgraded), 4no. water crossings, construction and storage compounds, an on site borrow pit and tree felling. While not part of the subject development seeking consent, the proposed Grid Connection Route ("GCR") to the 110KV substation at Ardnacrusha is included in the assessment of impacts. The site boundary is adjoined to the north by the Slieve Bernagh Bog SAC (002312). There are a number of watercourses draining the site which discharge via rivers to downstream Natura 2000 sites. The proposed GCR is located within local road L3046, which bisects Glenomra Wood SAC (001013).
Screening report	Yes. Prepared by MKO Consultants
Natura Impact Statement	Yes. Prepared by MKO Consultants
Relevant submissions	Third Party Observations to the appeal raised issues in relation to construction impacts on Slieve Bernagh Bog SAC (002312) and Glenomra Wood SAC (001013), potential Hen Harrier impacts and habitat removal, and proximity of works to watercourses with downstream connectivity to the Lower River Shannon SAC (002165) and River Shannon and River Fergus Estuaries SPA (004077).

	A submission was not received from the DHLGH in respect of nature conservation.			
Additional Information:				
N/A				
Step 2. Identification of relevant European sites using the Source-pathway-receptor model				
It is noted that the applicants stage 1 AA screening report included consideration of the Ratty River Cave SAC (002316), Kilkishen House SAC (002319) and Clare Glen SAC (000930), Slievefelim to Silvermines Mountains SPA (004165), Danes Hole, Poulnalecka SAC (000030) and Slieve Aughty Mountains SPA (004168), however I am satisfied that these sites can be excluded from consideration on the basis that there is no ecological justification for such a wide consideration of sites given the separation distances involved (which far exceeds relevant foraging ranges), location in separate hydrological sub-catchments and no pathways for effects. I have only included those sites adjacent to, in close proximity to, or with any possible ecological connection or pathway, to the proposed development site in this screening determination.				
European Site (code)	Qualifying interests ¹ Link to conservation objectives (NPWS, date)	Distance from proposed development (km)	Ecological connections ²	Consider further in screening ³ Y/N
Lough Derg (Shannon) SPA (004058)	Cormorant, Tufted Duck, Goldeneye, Common Tern, Wetlands. https://www.npws.ie/protected-sites/spa/004058 NPWS August 2024	5km at nearest point to windfarm site (to the west).	Yes, the wind farm is within the core foraging range for cormorant (5.2km*). * Thaxter et al. 2012	Yes.
River Shannon and River Fergus Estuaries SPA (004077)	Cormorant (breeding + wintering), Whooper Swan (wintering), Light-bellied Brent Goose (wintering), Shelduck (wintering), Wigeon (wintering), Teal (wintering), Pintail (wintering), Shoveler (wintering), Scaup (wintering), Ringed Plover (wintering), Golden Plover (wintering), Grey Plover (wintering), Lapwing (wintering), Knot (wintering), Dunlin (wintering), Black-tailed Godwit (wintering), Bar-tailed Godwit (wintering), Curlew (wintering), Redshank (wintering), Greenshank (wintering), Black-headed Gull (wintering), Wetlands.	16km at nearest point to windfarm site (to the south)	Yes, direct surface water pathway between SPA and windfarm/GCR site.	Yes.

	https://www.npws.ie/protected-sites/spa/004077 NPWS September 2012			
Glenomra Wood SAC (001013)	Old Sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles https://www.npws.ie/protected-sites/sac/001013 NPWS June 2018	4km at nearest point to windfarm site (to the south) but adjoins either side of proposed GCR.	Yes, proximity. The proposed GCR works are located within local road L3046 which bisects this SAC.	Yes
Slieve Bernagh Bog SAC (002312)	Northern Atlantic wet heaths with <i>Erica tetralix</i> , European dry heaths, Blanket bogs (*if active bog). https://www.npws.ie/protected-sites/sac/002312 NPWS August 2016	0km. Adjoins the windfarm site to the north (immediately adjacent to site boundary)	Yes, proximity. The subject site adjoins this SAC.	Yes.
Lower River Shannon SAC (002165)	Freshwater Pearl Mussel, Sea Lamprey, Brook Lamprey, River Lamprey, Atlantic Salmon (only in fresh water), Sandbanks which are slightly covered by sea water all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide,*Coastal lagoons, Large shallow inlets and bays, Reefs, Perennial vegetation of stony banks, Vegetated sea cliffs of the Atlantic and Baltic coasts, Salicornia and other annuals colonizing mud and sand, Atlantic salt meadows, Bottlenose Dolphin, Otter, Mediterranean salt meadows, Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachium</i> vegetation, <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils, *Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> . https://www.npws.ie/protected-sites/sac/002165 NPWS August 2012	4.5km at nearest point to windfarm site (to the east). Approx. 1.5km from GCR at nearest point (<i>Ardnacrusha 110kv substation</i>).	Yes. Indirect connection via watercourses which flow from the windfarm site and discharge downstream to the SAC (after merging with rivers), and via aquatic zones crossed by the proposed GCR which also discharge downstream to the SAC.	Yes.

Step 3. Describe the likely effects of the project (if any, alone or in combination) on European Sites

The windfarm site is directly adjoined by the Slieve Bernagh Bog SAC and the proposed GCR is located within Glenomra Wood SAC, via local road L3046 which bisects same. The wind farm site and the proposed GCR are also hydrologically linked to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. The wind farm site is also within the foraging range of the SCI bird species 'Cormorant' for the Lough Derg (Shannon) SPA. Accordingly, the potential impacts generated by construction and operation of the windfarm including disturbance, displacement, collision risk, habitat loss or degradation and deterioration in water quality require consideration.

Sources of impact and likely significant effects are detailed in the Table below.

AA Screening matrix

Site name Qualifying interests	Possibility of significant effects (alone) in view of the conservation objectives of the site*	
	Impacts	Effects
Lough Derg (Shannon) SPA (004058) Cormorant, Tufted Duck, Goldeneye, Common Tern, Wetlands.	Direct: There will be no direct impacts or effects as the proposed development is located outside and at a remove from this SPA with no hydrological connectivity. Indirect: The subject site is within the core foraging range for Cormorant, which is a bird species listed as an SCI for this SPA. There is potential for indirect impact(s) arising from construction activities, noise, emissions, habitat loss, human disturbance and operational changes to the host environment (from operating turbines).	There is potential for indirect effects on the breeding population of Cormorant associated with this SPA via habitat loss, disturbance, displacement or collision risk.
	Likelihood of significant effects from proposed development (alone): Yes.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? N/a.	
	Impacts	Effects
River Shannon and River Fergus Estuaries SPA (004077) Cormorant (breeding + wintering), Whooper Swan (wintering), Light-bellied Brent Goose (wintering), Shelduck (wintering), Wigeon (wintering),	Direct: There will be no direct impacts or effects as the proposed development is located outside and at a remove from this SPA. Indirect: There is a direct surface water pathway between this SPA and both the proposed wind farm and GCR site. There is potential therefore for indirect impacts on the SPA and	Potential for indirect effects on SCI species via a deterioration in water quality and habitat degradation.

Teal (wintering) Pintail (wintering), Shoveler (wintering), Scaup (wintering), Ringed Plover (wintering), Golden Plover (wintering), Grey Plover (wintering), Lapwing (wintering), Knot (wintering), Dunlin (wintering), Black-tailed Godwit (wintering), Bar- tailed Godwit (wintering), Curlew (wintering), Redshank (wintering) Greenshank (wintering), Black-headed Gull (wintering), Wetlands.	its SCI species as they are hydrologically linked through release of silt, sediment and hydrocarbons to surface waters primarily during construction works.	
	Likelihood of significant effects from proposed development (alone): Yes.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? N/A.	
	Impacts	Effects
Glenomra Wood SAC (001013) Old Sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	Direct: There is potential for direct impacts on this SAC given that the proposed GCR works are located within local road L3046 which bisects the SAC. Indirect: None.	Specifically, the SSCO's for this site identify the distribution of Old Sessile Oak woods as being present within Glenomra Wood either side of the local road. According to the Article 17 Report (NPWS 2019) the overall Conservation Status for this species is 'Bad' and the trend is 'Deteriorating'. There is potential for a direct adverse effect in the form of habitat loss. Removal or damage to vegetation and/or the introduction of an invasive species during works could undermine attribute targets of the associated SSCO.
	Likelihood of significant effects from proposed development (alone): Yes.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? N/A.	
	Impacts	Effects

Slieve Bernagh Bog SAC (002312) Northern Atlantic wet heaths with Erica tetralix, European dry heaths, Blanket bogs (*if active bog).	Direct: None. Indirect: None. This site was brought forward for consideration on the basis of proximity, given that it adjoins and is immediately adjacent to the northern boundary of the wind farm site. However, on further assessment it is noted that no works are proposed within the SAC. Furthermore, the SAC is located upgradient of the site and there is no downgradient hydrological connectivity. Given that the QI's for this site are terrestrial habitats, that no works are proposed within the SAC and there is no hydrological connection, there is no potential for direct or indirect effects.	None.
	Likelihood of significant effects from proposed development (alone): No.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? No.	
	Impacts	Effects
Lower River Shannon SAC (002165) Freshwater Pearl Mussel, Sea Lamprey, Brook Lamprey, River Lamprey, Atlantic Salmon (only in fresh water), Sandbanks which are slightly covered by sea water all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide,*Coastal lagoons, Large shallow inlets and bays, Reefs, Perennial vegetation of stony banks, Vegetated sea cliffs of the Atlantic and Baltic coasts, Salicornia and other annuals colonizing mud and sand, Atlantic salt meadows,	Direct: None. There will be no direct impacts or effects as the proposed development is located outside and at a remove from this SAC. Indirect: There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. There is potential therefore for indirect impacts on the SAC and its SCI habitats and species through release of silt, sediment and hydrocarbons to surface waters primarily during construction works. The terrestrial ranges for Otter can also extend outside of SAC boundaries, so there is potential for indirect effects on this SCI species during construction and increased human activity.	Potential for indirect effects on SCI species and habitats via a deterioration in water quality and habitat degradation. There is potential for indirect effects on otter associated with this SAC via disturbance.

Bottlenose Dolphin, Otter, Mediterranean salt meadows, Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation, Molinia meadows on calcareous, peaty or clayey-silt-laden soils, *Alluvial forests with Alnus glutinosa and Fraxinus excelsior.		
	Likelihood of significant effects from proposed development (alone): Yes.	
	If No, is there likelihood of significant effects occurring in combination with other plans or projects? N/A.	
Step 4 Conclude if the proposed development could result in likely significant effects on a European site		
Based on the information provided in the screening report, site visit, review of conservation objectives and supporting documents, I consider that in the absence of mitigation measures beyond best practice construction methods, the proposed development has the potential to result in significant effects on Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Woods SAC (001013) and Lower River Shannon SAC (002165). I concur with the applicants' findings that such impacts could be significant in terms of the stated conservation objectives of the SAC's and SPA's, specifically having regard to the stated attributes and targets, when considered on their own in relation to pollution related pressures, habitat loss or degradation and disturbance, displacement or mortality on qualifying habitats and species. An appropriate assessment is required on the basis of the possible effects of the project alone.		
Screening Determination		
Finding of likely significant effects		
In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of the information provided by the applicant, I conclude that the proposed development could result in significant effects on Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Wood SAC (001013) and Lower River Shannon SAC (002165) in view of the sites conservation objectives and a number of qualifying interests of those sites. It is therefore determined that Appropriate Assessment (Stage 2) [under Section 177V of the Planning and Development Act, 2000 (as amended)] of the proposed development is required.		

Appendix 2: Appropriate Assessment (ABP-321285-24)

The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, sections 177V [or S 177AE] of the Planning and Development Act 2000 (as amended) are considered fully in this section.

Taking account of the preceding screening determination, the following is an appropriate assessment of the implications of the proposed wind farm development in view of the relevant conservation objectives of Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Wood SAC (001013) and Lower River Shannon SAC (002165) based on scientific information provided by the applicant.

The information relied upon includes the following:

- Natura Impact Statement prepared by MKO Consultants
- EIAR Prepared by MKO Consultants

I am satisfied that the information provided is adequate to allow for Appropriate Assessment. I am satisfied that all aspects of the project which could result in significant effects are considered and assessed in the NIS and mitigation measures designed to avoid or reduce any adverse effects on site integrity are included and assessed for effectiveness.

Submissions/observations

Department of Housing, Heritage and Local Government

- No observations made on nature conservation.

Inland Fisheries Ireland

- The IFI raised concerns in relation to the protection of the inland fisheries resource including water quality, aquatic habitats and their associated riparian corridors

Public Observations

- Issues raised in the course of the appeal by third parties concern: construction works in proximity to Slieve Bernagh SAC, and impacts on the Glenmora Wood SAC as a result of the GCR

Decision of Planning Authority.

- The decision of the PA raised issues in relation to impacts on Birds and Bats, including cumulative impacts, and hydrological concerns impacting water quality

in downstream European Sites.

Lough Derg (Shannon) SPA (004058):

Summary of Key issues that could give rise to adverse effects (from screening stage):

- (i) Disturbance or displacement of species (Cormorant)**
- (ii) Collision Risk (Cormorant)**
- (iii) Habitat loss (Cormorant)**

See Table 5.21 of the NIS

Qualifying Interest features likely to be affected	Conservation Objectives	Potential adverse effects	Mitigation measures (summary)
Cormorant (<i>Phalacrocorax carbo</i>) [A017]	To restore the Favourable conservation condition of Cormorant in Lough Derg (Shannon) SPA. <i>Long term breeding population trend is stable or increasing. (Sufficient nesting sites throughout SPA, sufficient locations, habitat and forage biomass, absence of disturbance and no significant increase in barriers to connectivity with waters ecologically connected to colony).</i>	Collision Risk, disturbance, displacement or habitat loss.	None.
Tufted Duck (<i>Aythya fuligula</i>) [A061]	To maintain the Favourable conservation condition of Tufted Duck at Lough Derg (Shannon) SPA. <i>Long term winter population trend is stable or increasing. (Sufficient habitat, sufficient locations, habitat and forage biomass, absence of disturbance and barriers to connectivity do not</i>	None identified.	None.

	<i>impact access to SPA or ecologically important sites).</i>		
Goldeneye (<i>Bucephala clangula</i>) [A067]	To maintain the Favourable conservation condition of Goldeneye at Lough Derg (Shannon) SPA. <i>Long term winter population trend is stable or increasing. (Sufficient habitat, sufficient locations, habitat and forage biomass, absence of disturbance and barriers to connectivity do not impact access to SPA or ecologically important sites).</i>	None Identified.	None.
Common Tern (<i>Sterna Hirundo</i>) [A193]	To restore the Favourable conservation condition of Common Tern in Lough Derg (Shannon) SPA. <i>Long term SPA population trend if stable or increasing. (Sufficient productivity rate, sufficient nesting sites, Sufficient habitat, sufficient locations, habitat and forage biomass, absence of disturbance and no significant increase in barriers to connectivity)</i>	None Identified.	None.
Wetlands and Waterbirds [A999]	To maintain the Favourable conservation condition of Wetland habitats in Lough Derg (Shannon) SPA as a resource for the regularly occurring migratory waterbirds that utilise these areas. <i>No significant loss to wetland habitat, and no significant impact on the quality or functioning of the wetland habitat.</i>	None Identified.	None.
No other QIs were excluded.			

The above table is based on the documentation and information provided on the file and that available at www.NPWS.ie and I am satisfied that the submitted NIS has identified the relevant attributes and targets of the Qualifying Interests. In particular, I note those relating to Cormorant and sufficient locations, habitat and forage biomass, absence of disturbance and no significant increase in barriers to connectivity with waters ecologically connected to colony.

Assessment of issues that could give rise to adverse effects in view of conservation objectives:

The ecological information records that:

- all observations of Cormorant during waterbird distribution and abundance surveys were off site between 4.2km and 8.2km with only two incidental observations which were outside the 500m radius of the proposed turbine layout,
- Tufted Duck was not observed in or near the site, with the closest observation up to 5km distant,
- Golden eye was not observed in or near the site, with the closest observation up to 5km distant, and
- The wind farm is outside the core foraging range for breeding Common Tern (4.5km; Thaxter et al. 2012).

The site is considered to be of no ecological importance to these species and consequently there is no potential for adverse effect via collision risk, disturbance, displacement or habitat loss.

There is no hydrological connectivity between the windfarm site and this SPA, which is in a separate hydrological catchment. Therefore, there is no potential for downstream hydrological effects on this SPA, its SCI species or their supporting wetland habitats.

The proposed development will not undermine the objectives of the SPA.

In-combination effects

I am satisfied that in-combination effects have been assessed adequately in the NIS. The proposed grid connection has been assessed as part of the overall project. I am satisfied that the applicant has demonstrated satisfactorily that there is no potential for likely significant effects on Lough Derg (Shannon) SPA and that there is no potential for other plans and projects to combine to generate significant in-combination effects.

Findings and conclusions

The applicant determined that the proposed development alone, or in combination with other plans and projects, will not adversely affect the integrity of this European site.

Based on the information provided, I am satisfied that adverse effects arising from the proposed development can be excluded for the Lough Derg (Shannon) SPA. No direct or indirect impacts are predicted. I am satisfied that the wind farm site is not of ecological importance to SCI bird species for this SPA, that there is no hydrological connectivity between the proposed project and the SPA, and that there is no pathway for effects on this SPA, its SCI species or their supporting wetland habitats.

Reasonable scientific doubt

I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site integrity

The proposed development will not affect the attainment of the Conservation Objectives of the Lough Derg (Shannon) SPA. Adverse effects on site integrity can be excluded and no reasonable scientific doubt remains as to the absence of such effects.

River Shannon and River Fergus Estuaries SPA (004077):

Summary of Key issues that could give rise to adverse effects (from screening stage):

- (i) Deterioration in water quality and supporting wetland habitat degradation (Construction, operation & decommissioning).**

See Table 5.23 of the NIS

Qualifying Interest features likely to be affected	Conservation Objectives	Potential adverse effects	Mitigation measures (summary)
	Targets and attributes (summary)		Section 6.2.1.2.1 of the NIS (<i>and Chapter 9 of the EIAR</i>)
Cormorant (breeding + wintering) (<i>Phalacrocorax carbo</i>) [A017]	To maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA <i>No significant decline in breeding population, productivity, distribution, and prey. No significant increase in barriers to connectivity. No adverse effects from Human activity. Long term population trend stable or increasing. No significant decrease in the range, timing or intensity of use of areas by (non-breeding) cormorant.</i>	Deterioration in water quality during construction, operation and decommissioning as a result of silt laden run-off and other pollutants could affect the supporting wetland habitat of this species and undermine the distribution attribute and target of 'no significant decrease in the range, timing or intensity of use of areas by (non-breeding) cormorant'.	Avoidance of sensitive hydrological features by using buffer zones (50m for watercourses and 10m for manmade drains), New watercourse crossings will be pre-cast concrete bottomless box culverts or clear span culverts constructed in accordance with IFI Guidance and SNH good practice, (See Section 9.5.2.9. of Chapter 9 of <i>EIAR for full detailed measures</i>), No in-stream excavation works are proposed, and existing banks will be undisturbed. Underground cabling (following existing or upgraded roads) will pass over or below the culvert within the road,

			Near stream work will only be carried out between May to September (inclusive) in accordance with IFI Guidance. During near stream works, double row silt fences will be emplaced immediately down-gradient. No batching or storage of cement on site, A drainage maintenance plan for the on-site construction drainage system with monitoring (<i>See Section 9.5.2.2. of Chapter 9 of EIAR for full detailed monitoring measures</i>), Operational drainage system including interceptor drains to collect and re-distribute clean surface run-off, Swales/roadside drains collecting likely soiled run-off channelled to settlement ponds (with transverse drains on roads), Check dams to intercept silt at source, Settlement ponds buffering run-off and reducing hydraulic loading to watercourses (to greenfield run-off rate), Mitigations measures for control of Hydrocarbons (Section 9.5.2.6. of EIAR), Rehabilitation of construction areas at decommissioning stage.
Whooper Swan (wintering) (<i>Cygnus cygnus</i>) [A038]	To maintain the favourable conservation condition of Whooper Swan in the River	Deterioration in water quality during construction, operation and decommissioning as a result of silt laden	As above.

	Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Whooper Swan.</i>	run-off and other pollutants could affect the supporting wetland habitat of this species and undermine the population target and distribution target of 'no significant decrease in the range, timing or intensity of use of areas by Whooper Swan'.	
Light-bellied Brent Goose (wintering) (<i>Branta bernicla hrota</i>) [A046]	To maintain the favourable conservation condition of Light-bellied Brent Goose in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Light-bellied Brent Goose.</i>	As above.	As above.
Shelduck (wintering) (<i>Tadorna tadorna</i>) [A048]	To maintain the favourable conservation condition of Shelduck in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Shelduck.</i>	As above.	As above.
Wigeon (wintering) (<i>Anas penelope</i>) [A050]	To maintain the favourable conservation condition of Wigeon in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Widgeon.</i>	As above.	As above.
Teal (wintering) (<i>Anas crecca</i>) [A052]	To maintain the favourable conservation	As above.	As above.

	condition of Teal in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Teal.</i>		
Pintail (wintering) (<i>Anas acuta</i>) [A054]	To maintain the favourable conservation condition of Pintail in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Pintail.</i>	As above.	As above.
Shoveler (wintering) (<i>Anas clypeata</i>) [A056]	To maintain the favourable conservation condition of Shoveler in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Shoveler.</i>	As above.	As above.
Scaup (wintering) (<i>Aythya marila</i>) [A062]	To maintain the favourable conservation condition of Scaup in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Scaup.</i>	As above.	As above.
Ringed Plover (wintering) (<i>Charadrius hiaticula</i>) [A137]	To maintain the favourable conservation condition of Ringed Plover in the River	As above.	As above.

	Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Ringed Plover.</i>		
Golden Plover (wintering) (<i>Pluvialis apricaria</i>) [A140]	To maintain the favourable conservation condition of Golden Plover in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Golden Plover.</i>	As above.	As above.
Grey Plover (wintering) (<i>Pluvialis squatarola</i>) [A141]	To maintain the favourable conservation condition of Grey Plover in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Grey Plover</i>	As above.	As above.
Lapwing (wintering) (<i>Vanellus vanellus</i>) [A142]	To maintain the favourable conservation condition of Lapwing in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Lapwing.</i>	As above.	As above.
Knot (wintering) (<i>Calidris canutus</i>) [A143]	To maintain the favourable conservation condition of Knot in the River Shannon and	As above.	As above.

	River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Knot.</i>		
Dunlin (wintering) (<i>Calidris alpina</i>) [A149]	To maintain the favourable conservation condition of Dunlin in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Dunlin.</i>	As above.	As above.
Black-tailed Godwit (wintering) (<i>Limosa limosa</i>) [A156]	To maintain the favourable conservation condition of Black-tailed Godwit in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Black-tailed Godwit.</i>	As above.	As above.
Bar-tailed Godwit (wintering) (<i>Limosa lapponica</i>) [A157]	To maintain the favourable conservation condition of Bar-tailed Godwit in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Bar-tailed Godwit.</i>	As above.	As above.
Curlew (wintering) (<i>Numenius arquata</i>) [A160]	To maintain the favourable conservation condition of Curlew in the River Shannon and River Fergus Estuaries SPA.	As above.	As above.

	<i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Curlew.</i>		
Redshank (wintering) (<i>Tringa totanus</i>) [A162]	To maintain the favourable conservation condition of Redshank in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Redshank.</i>	As above.	As above.
Greenshank (wintering) (<i>Tringa nebularia</i>) [A164]	To maintain the favourable conservation condition of Greenshank in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Greenshank.</i>	As above.	As above.
Black-headed Gull (wintering) (<i>Chroicocephalus ridibundus</i>) [A179]	To maintain the favourable conservation condition of Black-headed Gull in the River Shannon and River Fergus Estuaries SPA. <i>Long term population trend stable or increasing. No significant decrease in range, timing or intensity of use of areas by Black-headed Gull.</i>	As above.	As above.
Wetlands and Waterbirds [A999]	To maintain the favourable conservation condition of the wetland habitat in the River Shannon and River Fergus Estuaries SPA as a resource for the	Deterioration in water quality during construction, operation and decommissioning as a result of silt laden run-off and other pollutants could	As above.

	regularly occurring migratory waterbirds that utilise it. <i>The permanent area occupied by wetland should be stable and not less than 32,261ha.</i>	undermine this SSCO and target permanent wetland area.	
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No other QIs were excluded.

The above table is based on the documentation and information provided on the file and that available at www.NPWS.ie and I am satisfied that the submitted NIS has identified the relevant attributes and targets of the Qualifying Interests. In particular, I note those relating to Cormorant and sufficient locations, habitat and forage biomass, absence of disturbance and no significant increase in barriers to connectivity with waters ecologically connected to colony.

Assessment of issues that could give rise to adverse effects in view of conservation objectives:

In the interests of veracity, it is noted that the ecological information records that:

- all observations of Cormorant during waterbird distribution and abundance surveys were off site between 4.2km and 8.2km with only two incidental observations which were outside the 500m radius of the proposed turbine layout,
- Whooper Swan was not observed in or near the site, with the closest observation up to 5.2 km distant,
- Shoveler was not observed in or near the site, with the closest observation up to 5km distant,
- Scaup was not observed in or near the site, with the closest observation up to 5 km distant,
- Golden Plover was not observed in or near the site, with the closest observation up to 5 km distant,
- Lapwing was recorded within the potential zone of influence of the proposed windfarm during the survey effort, but there was no evidence of breeding or roosting at the site,
- Curlew was not observed in or near the site, with the closest observation up to 5 km distant,
- Redshank was not observed in or near the site, with the closest observation up to 5 km distant,
- None of the other SCI species were recorded during the surveys.

Therefore, the site is considered to be of no ecological importance to these species and consequently there is no potential for adverse effect via collision risk, disturbance, displacement or habitat loss.

However, the windfarm site is hydrologically connected to this SPA and a source-pathway-receptor link exists for adverse effects on SCI species and supporting wetland habitat for this site as a result of a deterioration in water quality and habitat degradation during construction, operation and decommissioning. This is assessed below.

(i) Deterioration in water quality and supporting wetland habitat degradation

A deterioration in water quality with the SPA during construction, operation and decommissioning as a result of silt laden run-off and other pollutants could affect the wetland habitat of this SPA and undermine the target that it remains stable and not less than 32,261ha. This wetland habitat supports a number of SCI bird species and any adverse effect on the supporting habitat could also undermine the population trend targets and distribution targets which seeks no significant decline in breeding population of cormorant, long term population trends stable and increasing (all SCI species), and no significant decrease in the range, timing or intensity of use of areas by SCI species.

Mitigation Measures and Conditions

The focus of the proposed mitigation measures is to prevent pollutants and silt/sediment entering surface waters and receiving watercourses. This is to be achieved via a detailed and comprehensive suite of integrated mitigation measures which are based on conformity with best practice regulations and guidance, avoidance by design, pre-emptive site drainage management, timing of works with regard to seasons and weather, drain inspection and maintenance, surface water quality monitoring, Source controls, in-line controls, and treatment systems. All mitigation measures are included in a Construction and Environmental Management Plan (CEMP) and an Environmental Clerk of Works (ECoW), supported by a Project Ecologist/Ornithologist and Project Hydrologist, will oversee construction works and audit implementation of the CEMP and all mitigation measures.

The mitigation measures which respond to the specific threats associated with clear felling, construction activities and suspended solids, hydrocarbons, cement-based products, wastewater and morphological changes include:

Tree (Clear) Felling:

- Conformity with best practice Forest Service regulations & code of practice, Coillte and DAFM guidance,
- A 50m hydrological buffer zone will be maintained, with most of the project infrastructure located outside of this buffer zone. Only 0.6ha (of 19ha) of proposed tree felling is within the proposed 50m hydrological buffer zone. In this area a minimum buffer zones of 10m on moderate slopes, increasing to 15m for steep and 20m for very steep slopes will be applied leading to aquatic zones.
- Control of machine combinations, operation, maintenance, refuelling and traverse patterns with use of brash mats to support vehicles on soft ground.
- Silt fences (double or triple where necessary) placed down gradient to slow water flow, increase residence time and allow settling.
- Suspension or scaling back of works if heavy rain is forecast.
- Drain inspection and maintenance. Surface water quality monitoring (before, during and after operations) with full detail in the Surface Water Management Plan (Appendix 4-4 of EIAR).

Earthworks/all construction activities:

- As above.
- Avoidance by application of 50m buffer zone from hydrological features.
- Pre-commencement temporary drainage works including blocking any existing dry forestry drains that intercept the works area with down gradient check dams/silt traps, installing clean water interceptor drains upgradient of works areas, installing check dams and silt traps on all forestry and road drains with surface water flows, and installing a double silt fence perimeter down slope of works areas within the 50m buffer zone,
- Source controls including interceptor drains, vee drains, diversion drains, erosion and velocity control measures such as use of sand bags. Small working areas with covered stock piles etc,
- In-line controls as above and including oversized swales, straw bales, weirs, silt fences, collection sumps, sediment traps, pumping systems, settlement ponds etc,
- Treatment systems including sumps and ponds, storage lagoons, sediment traps and settlement ponds, proprietary settlement systems such as 'silt buster' etc.
- Integration of the proposed wind farm drainage network with the existing forestry drainage network by: no direct discharge to existing drainage other than from interceptor drains (which will convey clean runoff); placing silt traps in existing drains upstream of any streams where construction/felling is taking place, which will be diverted to interceptor drains or culverted under works, discharge of run-off from hardstanding areas to settlement ponds and buffered outfalls to vegetated surfaces; buffered outfalls promoting percolation of drainage waters across vegetation; and drains running parallel to roads will be upgraded including with velocity and silt control measures, with buffered outfalls added to protect downstream surface waters.

Borrow Pit

This was a particular concern of the PA. It is proposed that excavated peat/subsoil (spoil) will be stored in the excavated borrow pit in addition to use for landscaping throughout the site. The borrow pit is located outside of the 50m buffer zone and is an enclosed area within which it is opined that drainage can be easily managed. This will be achieved through silt fences, straw bales and biodegradable matting with drainage pumped to settlement ponds as required with overflow through controlled overflow pipes. It is anticipated that pumping will be intermittent depending on rainfall amounts. The borrow pit settlement ponds have been designed to allow for a 24hr retention time, which is the highest level of protection recommended by the EPA. Once the pit has been seeded and vegetation is established, the risk to downstream surface water is significantly reduced.

Settlement ponds

Designed for 1 in 10-year flows with a built-in redundancy (+20%) to account for climate change effects on rainfall.

Proposed Crid Connection Route

The majority of the proposed GCR is in excess of 50m from any watercourse with the exception of existing watercourse crossings. All of the crossings are existing bridges, pipes and culverts along the public road and no in-stream works are required. However, there is potential for effects during trench excavation work and associated mitigation measures are set out below under 'morphological changes'.

Hydrocarbons:

- Inspection and certification of plant,
- On-site refuelling using a mobile double skinned fuel bowser, (which itself will be filled off-site) with drip trays and absorbent mats,
- Use of trained personnel only with permit,
- Lock system on refuelling equipment. Inspections for leaks and damage,
- Fuel storage areas bunded with drainage system and oil interceptor,
- An emergency plan to deal with spillages is included in the CEMP (Appendix 4-3) with spill kits available.

Cement Products:

- No batching of wet concrete products will occur on site with use of a ready-mixed supply of wet concrete products and where possible emplacement of pre-cast elements (for culverts and concrete works),
- Only chute cleaning will be carried out on site with wash waters undertaken at lined concrete washout ponds,
- Concrete pouring only during dry weather, with the pour site kept free of standing water and plastic covers ready in case of sudden rainfall event,

Wastewater:

- Use of self-contained port-a-loos with integrated waste holding tanks, removed after use with waste discharged at a suitable off-site treatment location,
- No water or wastewater will be sourced or discharged on or to the site.

Morphological changes to surface water courses:

Within the windfarm site there are a total of 3no. water crossing over EPA mapped watercourses (2no. upgrades and 1no. new) and an additional 2no. crossings over unmapped natural 1st order streams. These are described in Section 9.5.2.9 of the EIAR. The following mitigation measures are proposed:

- Man made drains will be rerouted around wind farm infrastructure or integrated into the drainage design. Those that are deeply incised will be culverted where road crossings are proposed,

- No in-stream excavation works are proposed. New and upgraded crossings will be clear span or box culvert crossings and existing banks will remain undisturbed, with installation by crane and no contact with watercourse,
- All OPW and IFI guidance will be integrated into the design,
- Drainage will be installed in advance. Plant and equipment will not be permitted to track across watercourse.
- Works will be planned during July to September in accordance with IFI guidance
- Where works are necessary within the 50m buffer zone, double row silt fences will be installed as described above.
- All new crossings will require a Section 50 application (Arterial Drainage Act, 1945) and will be designed in accordance with the application consent guidelines.

There will be a total of 5no. crossings over EPA mapped watercourses associated with the proposed GCR (1no. of which is within the windfarm site) and 8no. crossings over unmapped watercourses with the crossings detailed in Section 9.3.3.2 of the EIAR and the crossing methods detailed in Section 9.5.2.10 of the EIAR. Mitigation measures include:

- Temporary advance drainage measures including use of check dams, silt traps and double silt fence perimeter,
- No stock piling of materials in constraint zones, no refuelling or overnight parking of machinery,
- No concrete truck chute cleaning and no works during heavy rain,
- No instream works proposed, excess construction material immediately removed to licensed facility,
- Spill kits available
- Silt fencing erected on sloping ground towards watercourses,
- Additional mitigation measures for HDD drilling as described in Section 9.5.2.13 of the EIAR and including bunding of the area around the bentonite batching, pumping and recycling plant using terram and sandbags, drilling fluids retained within a sealed tank/sump to prevent migration (from works area) and a 'Fracture Blow-out (Frac-out) Prevention and Contingency Plan.

I am satisfied that the preventative measures which are aimed at interrupting the source-pathway-receptor are targeted at the key threats to SCI habitats and species and that by arresting these pathways or reducing possible effects to a non-significant level, adverse effects can be prevented. Mitigation Measures related to water quality are captured in conditions No. 5, 9 & 11 of the Inspectors Report.

In-combination effects

I am satisfied that in-combination effects have been assessed adequately in the NIS. The proposed grid connection has been assessed as part of the overall project. The plans and projects considered in the assessment of in-combination effects are listed in Appendix 5. This includes consideration of agriculture and forestry and other developments including the permitted Fahybeg and Carrownagowan windfarms, and the proposed Oatfield and Ballycar Windfarms. I note that although the proposed Knockshavno Windfarm was considered, it was not included in the assessment of in-combination effects as it was at 'pre-planning stage'. The proposed Knockshavno Windfarm consists of 9no. turbines approx. 5km west of the project site and an application for this project was subsequently lodged with the Board on 30/08/2024 (ABP-**320705-24** refers). I have examined the EIAR, AA Screening Report and NIS for the Knockshavno windfarm project. The AA Screening report for the Knockshavno project identified that the potential for likely significant effects, including in-combination effects, on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA could not be excluded. Chapter 9 of the EIAR (Knockshavno) concludes that the main likelihood of cumulative effects is associated with surface water quality and that the Lackareagh Windfarm is outside of the cumulative study area with no potential for hydrological cumulative effects to occur due to a lack of hydrological connectivity. I further note that the NIS (Knockshavno) concludes that with the mitigation measures prescribed to block the potential for adverse effects to the said SAC and SPA, that there is no potential for in-combination effects. Having regard to same, and on the basis that the applicant has demonstrated that no significant residual effects will remain post the application of mitigation measures in respect of the proposed Lackareagh

development, I am satisfied that there is no potential for in-combination effects on the r River Shannon and River Fergus Estuaries SPA.

Findings and conclusions

The applicant determined that following the implementation of mitigation measures the construction, operation and decommissioning of the proposed development alone, or in combination with other plans and projects, will not adversely affect the integrity of this European site.

Based on the information provided, I am satisfied that adverse effects arising from the proposed development can be excluded for the River Shannon and River Fergus Estuaries SPA. No direct impacts are predicted. Indirect impacts would be temporary in nature and mitigation measures are described to prevent ingress of silt laden surface water and other construction related pollutants. Monitoring measures are proposed. I am satisfied that the mitigation measures proposed to prevent such effects have been assessed as effective and can be implemented and conditioned if permission is granted.

Reasonable scientific doubt

I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site integrity

The proposed development will not affect the attainment of the Conservation Objectives of the River Shannon and River Fergus Estuaries SPA. Adverse effects on site integrity can be excluded and no reasonable scientific doubt remains as to the absence of such effects.

Glenomra Wood SAC (001013):

Summary of Key issues that could give rise to adverse effects (from screening stage):

- (i) Habitat loss, removal or degradation
- (ii) Spread of invasive species

See Table 5-1 of the NIS

Qualifying Interest features likely to be affected	Conservation Objectives Targets and attributes (summary)	Potential adverse effects	Mitigation measures (summary) Section 6.1.1.2 of the NIS.
Old Sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles. [91A0]	To maintain the favourable conservation condition of Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles in Glenomra Wood SAC. Stable or increasing habitat and woodland size; no decline in distribution;	Specifically, the SSCO's for this site identify the distribution of Old Sessile Oak woods as being present within Glenomra Wood either side of the local road. According to the Article 17 Report (NPWS 2019) the overall Conservation Status for this species is 'Bad' and the trend is 'Deteriorating'.	Avoidance of habitats Controls on parking, storage and stock piles of materials. No vegetation removal in habitats of importance. Supervision of ECoW.

	diverse woodland structure with closed canopy of mature trees and sub-layer of semi-mature, shrubs and herbs; maintain diversity & extent of community types; seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival; at least 30m³/ha of fallen timber greater than 10cm & 30 snags/ha; no decline in veteran trees, local distinctiveness or native tree cover; a variety of typical native species present; and negative indicator species absent or under control.	There is potential for a direct adverse effect in the form of habitat loss during construction. Removal or damage to vegetation and/or the introduction of an invasive species during works could undermine attribute targets of the associated SSCO.	
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No other QIs were excluded.

Assessment of issues that could give rise to adverse effects in view of conservation objectives:

(i) Habitat Loss, removal or degradation

Specifically, the SSCO's for this site identify the distribution of Old Sessile Oak woods as being present within Glenomra Wood either side of the local road. According to the Article 17 Report (NPWS 2019) the overall Conservation Status for this species is 'Bad' and the trend is 'Deteriorating'. This presents a direct risk of habitat loss, removal or degradation as a result of construction activities and practices.

Mitigation measures and conditions

Mitigation is proposed by avoidance by ensuring that all works remain within the local road and do not enter any adjacent habitats. Practical mitigation measures include:

- Habitats of importance will be sectioned off with fencing, clearly marked by the contractor and under the supervisions of an ECoW,
- No parking of vehicles, storage or equipment, machinery or stockpiles of materials will take place in fenced areas,
- There will be no vegetation removal in habitats of importance, and
- All works will be undertaken under the supervision of an ECoW.

I am satisfied that the preventative measures aimed at avoiding habitat loss, removal or degradation address the key threats from construction activities associated with the proposed GCR and that they can be implemented, supervised effectively and will be effective in preventing habitat loss, removal or degradation. Mitigation measures are captured in Planning Condition No. 5,9 & 11 of the inspector's report.

(ii) Spread of invasive species

The assessment of impacts identified that the introduction of an invasive species during works could undermine attribute targets of the associated SSCO which seeks to ensure that negative indicator species, particularly invasive species are absent or under control. However, the NIS the negates to consider this matter further in Section 6 and in the 'assessment of potential effects & associated mitigation'. Notwithstanding, I consider that the risk of introduction of an invasive species is negligible, given the nature of the proposed works within the road and the materials which will likely be used. However, I consider that there is a risk of spreading invasive species if construction activities disturb existing invasive species which adjoin or are in proximity to the local road, for example where parking or storage may take place outside of fenced areas. In this regard I note that the baseline invasive species survey identified one species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) along the proposed GCR – Giant Hogweed (*Heracleum mantegazzianum*).

Mitigation measures and conditions

Notwithstanding the failure of the NIS to address mitigation measures with regard to invasive species in respect of this SAC, I note that the presence of Giant Hogweed at the proposed GCR is recognized together with Invasive Species Mitigation measures in Section 3.8 of the CEMP. Mitigation Measures include:

- A pre-commencement survey by a suitably qualified ecologist,
- Preparation of an Invasive Species Management Plan where species are recorded,
- Toolbox talks by ECoW
- Demarcation of infested area, with works in the vicinity carried out only under supervision of ECoW
- Biosecurity measures will ensure construction material is imported from a confirmed invasive free source with all plant and machinery thoroughly cleaned before entering and existing the site,
- Only those inducted in biosecurity measures can enter contaminated zones, and
- Good site hygiene practices as comprehensively set out in Section 3.8.2 of the CEMP.

Accordingly, whilst I am not satisfied that the applicant has assessed the potential threats and effects associated with the spread of invasive species within the NIS or set out mitigation measures to avoid or prevent such effects, I am satisfied that the risk has been identified and quantified in the baseline invasive species survey and that mitigation measures aimed at Giant Hogweed at this site is included in the CEMP. I am satisfied that these measures can be implemented, supervised effectively and will be effective in preventing the spread of invasive species. Mitigation measures are captured in Planning Condition No's. 5,9 & 11 of the Inspectors Report.

In-combination effects

I am satisfied that in-combination effects have been assessed adequately in the NIS. The proposed grid connection has been assessed as part of the overall project and no other plans and projects could combine to generate significant effects when mitigation measures are considered. I am satisfied that the applicant has demonstrated that no significant residual effects will remain post application of mitigation measures.

Findings and conclusions

The applicant determined that following the implementation of mitigation measures the construction, operation and decommissioning of the proposed development alone, or in combination with other plans and projects, will not adversely affect the integrity of this European site.

Based on the information provided, I am satisfied that adverse effects arising from the proposed development can be excluded for the Glenomra Wood SAC. No direct impacts are predicted. Indirect impacts would be temporary in nature and mitigation measures are described to prevent ingress of silt laden surface water and other construction related pollutants. Monitoring measures are proposed. I am satisfied that the mitigation measures proposed to prevent such effects have been assessed as effective and can be implemented and conditioned if permission is granted.

Reasonable scientific doubt

I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site Integrity

The proposed development will not affect the attainment of the Conservation Objectives of the Glenomra Wood SAC. Adverse effects on site integrity can be excluded and no reasonable scientific doubt remains as to the absence of such effects.

Lower River Shannon SAC (002165):**Summary of Key issues that could give rise to adverse effects (from screening stage):**

- (i) Deterioration in water quality and habitat degradation**
- (ii) Disturbance of mobile species**

See Table 5-4 of the NIS

Qualifying Interest features likely to be affected	Conservation Objectives	Potential adverse effects	Mitigation measures (summary)
	Targets and attributes (summary)		Section 6.2.1.2.1 & 6.2.2.2.1 of the NIS.
Sea Lamprey (<i>Petromyzon marinus</i>) [1095]	To restore the favourable conservation condition of Sea Lamprey in the Lower River Shannon SAC Distribution greater than 75% of main stem length of rivers accessible from estuary, at least 3 age/size groups present, juvenile density at least 1/m², no decline in extent and distribution of spawning beds, and more than 505 of sample sites positive.	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. The proposed development will not result in any barriers to movement which could effect distribution targets. The development could however undermine the targets in relation to juvenile population structure and density, the extent and distribution of spawning habitat and the availability of juvenile habitat as a result of deterioration in water quality and habitat degradation through the	As per the summary mitigation measures set out above for 'Cormorant' in respect of the River Shannon and River Fergus Estuaries SPA (004077).

		release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and decommissioning stages.	
Brook Lamprey (<i>Lampetra planer</i>) [1096]	To maintain the favourable conservation condition of Brook Lamprey in the Lower River Shannon SAC Access to all watercourses down to first order streams, at least 3 age/size groups present, mean catchment juvenile density at least 2/m2, no decline in extent and sitribution of spawning beds, and more than 50% sample sites positive.	Indirect. As above (for Sea Lamprey).	As above.
River Lamprey (<i>Lampetra fluviatilis</i>) [1099]	To maintain the favourable conservation condition of River Lamprey in the Lower River Shannon SAC Access to all watercourses down to first order streams, at least 3 age/size groups present, mean catchment juvenile density at least 2/m2, no decline in extent and sitribution of spawning beds, and more than 50% sample sites positive.	Indirect. As above (for Sea Lamprey).	As above.
Atlantic Salmon <i>Salmo salar</i> (only in fresh water) [1106]	To restore the favourable conservation condition of Salmon in the Lower River Shannon SAC 100% of river channels down to second order accessible from estuary, conservation limit for each system consistently exceeded,	Indirect. As above (for Sea Lamprey).	As above.

	maintain or exceed 0+ fry mean catchment-wide abundance threshold value, no significant decline in out migrating smolt abundance, no decline in number and distribution of spawning redds due to anthropogenic causes, and at least Q4 at all sites sampled by EPA.		
Sandbanks which are slightly covered by sea water all the time [1110]	To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time in the Lower River Shannon SAC Distribution of sandbanks stable, permanent habitat area stable or increasing, subtidal sand to mixed sediment with Nephtys spp. Community complex conserved in a natural condition.	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. The development could undermine the targets in relation to habitat distribution and trend and community type conservation as a result of deterioration in water quality through the release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and decommissioning stages.	As above.
Estuaries [1130]	To maintain the favourable conservation condition of Estuaries in the Lower River Shannon SAC Permanent habitat area stable or increasing, specified intertidal and subtidal community types conserved in a natural condition.	Indirect. As above (for Sandbanks).	As above.
Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at	Indirect. As above (for Sandbanks).	As above.

	low tide in the Lower River Shannon SAC Permanent habitat area stable or increasing, specified intertidal community types conserved in a natural condition.		
Large shallow inlets and bays [1160]	To maintain the favourable conservation condition of Large shallow inlets and bays in the Lower River Shannon SAC Permanent habitat area stable or increasing, specified intertidal and subtidal community types conserved in a natural condition.	Indirect. As above (for Sandbanks).	As above.
Reefs [1170]	To maintain the favourable conservation condition of Reefs in the Lower River Shannon SAC Distribution of reefs stable, permanent habitat area stable, specified intertidal and subtidal community types conserved in a natural condition	Indirect. As above (for Sandbanks).	As above.
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]	To restore the favourable conservation condition of Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) in the Lower River Shannon SAC Habitat area stable or increasing, no decline or change in habitat distribution, maintain natural circulation of sediments and organic matter, maintain creek and pan structure,	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. The development could undermine the targets in relation to habitat area, physical structure, vegetation structure and composition as a result of deterioration in water quality through the release of silt, sediment and hydrocarbons to	As above.

	maintain natural tidal regime, maintain range of coastal habitats inc. transitional zones, maintain structural variation within sward, maintain more than 90% of saltmarsh area vegetated, maintain range of sub-communities, and no significant expansion of common cordgrass.	surface waters primarily during construction works but also operational and decommissioning stages.	
Bottlenose Dolphin (<i>Tursiops truncatus</i>) [1349]	To maintain the favourable conservation condition of Bottlenose Dolphin in the Lower River Shannon SAC Species range should not be restricted by artificial barriers, critical areas should be maintain in a natural condition, and human activities should occur at levels that do not adversely affect the bottle nose dolphin population at the site.	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. The proposed development will not result in any barriers to movement which could effect distribution targets and will not result in disturbance as works are outside the known dolphin range. The development could however undermine the targets in relation to habitat use of critical areas as a result of deterioration in water quality and habitat degradation through the release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and decommissioning stages.	As above.
Otter (<i>Lutra lutra</i>) [1355]	To restore the favourable conservation condition of Otter in the Lower River Shannon SAC No significant decline in distribution, terrestrial habitat, marine habitat, freshwater habitat, lake/lagoon habitat, couching sites and holts,	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. No evidence of otter was found within any of the watercourses within the windfarm site. Evidence of otter activity was found during otter	As above. Otter specific: Construction methodologies. Pre-commencement Otter Survey. Application for derogation licence where necessary.

	fish biomass available and no significant increase in barriers to connectivity.	surveys in the form of spraints at two locations: under Killaderry Bridge on the lower reaches of the Broadford River (wider study area) and at the proposed GCR water crossing on the River Blackwater, with otter prints also recorded at the latter. The proposed development will not result in any reduction of otter habitat, loss of couching or nesting sites and will not result in barriers to connectivity. The proposed development could undermine the targets in relation to fish biomass available and habitat distribution as a result of deterioration in water quality and habitat degradation through the release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and decommissioning stages.	No works within 150m of any holts at which breeding females or cubs are present. No wheeled or tracked vehicles within 20m of active, non-breeding holts. No light work within 15m except under licence.(TII, 2006) Supervision by ECoW. New water crossings pre-cast concrete bottomless box culverts or clear span culverts (IFI Guidance). Addition of wildlife ledges where necessary.
Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	To restore the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) in the Lower River Shannon SAC. Habitat area increasing, no decline or change in distribution, maintain natural circulation of sediments and organic matter, maintain/restore creek and pan structure, maintain natural tidal regime, maintain range of coastal habitats inc. transitional zones, maintain structural variation within sward,	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. The development could undermine the targets in relation to habitat area and distribution, physical structure, vegetation structure and composition as a result of deterioration in water quality through the release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and	As above.

	maintain more than 90% of area outside creeks vegetated, maintain range of sub-communities with typical species, and no significant expansion of cordgrass.	decommissioning stages.	
Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]	To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation in the Lower River Shannon SAC. Habitat area stable or increasing, no decline in distribution, maintain appropriate hydrological, natural tidal and freshwater seepage regimes, the substratum should be dominated by the particle size ranges appropriate to the habitat sub-type, concentration of nutrients in water column should be sufficiently low to prevent changes in species composition or habitat condition, typical species of the relevant habitat sub-type should be present and in good condition, area of active floodplain at and upstream of habitat should be maintained, and area of riparian woodland at and upstream of the bryophyte-rich sub-type should be maintained.	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site. The proposed development will not result in any effects on the flood plain connectivity or riparian habitat targets for this site. The development could undermine the targets in relation to habitat area and distribution, hydrological regimes, substratum composition, water quality and vegetation composition as a result of deterioration in water quality through the release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and decommissioning stages.	As above.
*Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]	To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> ,	There are multiple hydrological connections between this SAC and both the proposed wind farm and GCR site.	As above.

	Alnion incanae, Salicion albae) in the Lower River Shannon SAC. Habitat area stable or increasing, no decline in distribution, woodland size stable or increasing, woodland structure diverse with closed canopy, sub-canopy with semi-mature trees and shrubs, well-developed herb layer, maintain diversity and extent of community types, seedlings, saplings and pole-age classes adequate to ensure survival, appropriate hydrological regime necessary to maintain alluvial vegetation, at least 30m³/ha of fallen timber greater than 10cm diameter and 30 snags/ha, no decline in veteran trees, local distinctiveness or native tree cover, variety of native species present, inc. alder, willows, oak and ash, and negative indicator species absent or under control.	The proposed development will not result in any effects on the woodland structure (dead wood) targets for this site. The development could undermine the targets in relation to habitat area and distribution, woodland size, structure (other than dead wood), hydrological regime, and vegetation composition as a result of deterioration in water quality through the release of silt, sediment and hydrocarbons to surface waters primarily during construction works but also operational and decommissioning stages.	
Other QI's	Not at Risk	Rationale for Exclusion:	
Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029]	Not at risk: To restore the favourable conservation condition of Freshwater Pearl Mussel in the Lower River Shannon SAC	The SSCO for this species applies to the Cloon River, Co. Clare only (Map. 15 of SSCO document refers). The project has no hydrological connectivity with the Cloon River population and therefore there is no pathway for effects.	
*Coastal lagoons [1150]	Not at risk: To restore the favourable conservation condition of Coastal lagoons in the Lower River Shannon SAC	According to Map 6 of the SSCO, the nearest habitat occurs approx. 30km downstream of the proposed GCR and 45km downstream of the wind farm site and in any event the QI for this habitat are primarily influenced by marine processes. Accordingly, there is no pathway for effects from the proposed project.	
Perennial vegetation of stony banks [1220]	Not at risk:	The proposed development is located entirely outside of the boundary of this SAC and there is no	

	To maintain the favourable conservation condition of Perennial vegetation of stony banks in the Lower River Shannon SAC.	hydrological connectivity with this habitat. Accordingly, there is no pathway for effects.
Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Not at risk: To maintain the favourable conservation condition of Vegetated sea cliffs in the Lower River Shannon SAC	As above (for perennial vegetation of stony banks)
Salicornia and other annuals colonizing mud and sand [1310]	Not at risk: To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the Lower River Shannon SAC	As above (for perennial vegetation of stony banks).
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	Not at risk: To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt laden soils (Molinion caeruleae) in the Lower River Shannon SAC.	As above (for perennial vegetation of stony banks).

No other QIs were excluded in addition to those described as not at risk above.

Assessment of issues that could give rise to adverse effects in view of conservation objectives:

(i) Deterioration in water quality and habitat degradation

A deterioration in water quality with the SAC during construction, operation and decommissioning as a result of silt laden run-off and other pollutants could affect the SCI habitats and species of this SAC as listed above and undermine the respective SSCO attribute targets.

Mitigation Measures and Conditions

The focus of the proposed mitigation measures is to prevent pollutants and silt/sediment entering surface waters and receiving watercourses. This is to be achieved via a detailed and comprehensive suite of integrated mitigation measures which are based on conformity with best practice regulations and guidance, avoidance by design, pre-emptive site drainage management, timing of works with regard to seasons and weather, drain inspection and maintenance, surface water quality monitoring, Source controls, in-line controls, and treatment systems. All mitigation measures are included in a Construction and Environmental Management Plan (CEMP)

and an Environmental Clerk of Works (ECoW), supported by a Project Ecologist/Ornithologist and Project Hydrologist, will oversee construction works and audit implementation of the CEMP and all mitigation measures.

The mitigation measures which respond to the specific threats associated with clear felling, construction activities and suspended solids, hydrocarbons, cement-based products, wastewater and morphological changes are comprehensively summarised in respect of the River Shannon and River Fergus Estuaries SPA as above. The same mitigation measures in respect of water quality apply to this SAC.

I am satisfied that the preventative measures which are aimed at interrupting the source-pathway-receptor are targeted at the key threats to SCI habitats and species and that by arresting these pathways or reducing possible effects to a non-significant level, adverse effects can be prevented. Mitigation Measures related to water quality are captured in condition No's 5, 9 & 11 of the Inspectors Report

(ii) Disturbance of Mobile Species

Ecological surveys have demonstrated that Otter, or signs of otter, were not found in any of the watercourses within the proposed wind farm site. Evidence of otter activity in the form of otter spraints was found at two other locations, one within the wider study area on the lower reaches of the Broadford River (under Killaderry Bridge), and one at a water crossing on the proposed GCR on the River Blackwater. Otter prints were also recorded along the River Blackwater. For the proposed GCR, only minor underground cabling installation works are proposed within the public road and all bridge crossings will be by HDD, ducting in Trefoil within Bridge Deck or bridge strapping. Having regard to same, and the findings of the baseline survey, it is considered that the proposed project will not result in any reduction in otter habitat, loss of couching or resting sites and direct mortality related impacts are not anticipated. In relation to disturbance, otter are predominantly crepuscular in nature and it is anticipated that the daytime construction activities will minimise potential disturbance related impacts to this species, with any disturbance impacts short term in nature on the local population. A deterioration in water quality could however result in a reduced prey availability and undermine the distribution and available fish biomass targets for this species. There is also potential that in the absence of mitigation, new culverts within the windfarm site could result in a barrier to the movement of otter.

Mitigation measures and conditions

The focus of mitigation measures proposed are on pre-commencement surveys (in accordance with TII,2007) to ensure the avoidance of disturbance/displacement and direct mortality and that no otter holts/breeding sites have been established since the original surveys undertaken. Measures include:

- In the event that an otter holt is identified within or immediately adjacent to the proposed project development footprint, consultation will be undertaken with NPWS and a derogation licence applied for where necessary,
- All conditions of a derogation licence will be complied with in full,
- No works within 150m of any holts at which breeding females or cubs are present,
- No wheeled or tracked vehicles within 20m of active but non-breeding, other holts,
- Light work will not take place within 15m of such holts, except under licence,
- Works will be undertaken or supervised by an appropriately qualified ECoW,
- New watercourse crossings will comprise pre-cast concrete bottomless box culverts or clear span culverts constructed in accordance with IFI guidance. (No in-stream works),
- Wildlife ledges will be considered where/if necessary,
- Rehabilitation of constructed areas (such as turbine bases and hard stands) during decommissioning by covering with vegetation to encourage growth and reduce run-off and sedimentation,
- Ducting (for cabling) to remain in situ to avoid generation of suspended sediment,
- Mitigation measures in relation to hydrocarbons are as per construction stage.

I am satisfied that the measures proposed are adequate and will be effective in ensuring that the attributes required to restore the favourable condition for Otter will not be adversely affected and that the proposed development will not prevent or delay the attainment of the conservation objective. Mitigation measures are captured in Planning Condition No. 5, 9 & 11 of the Inspectors Report.

In-combination effects

I am satisfied that in-combination effects have been assessed adequately in the NIS. The proposed grid connection has been assessed as part of the overall project. The plans and projects considered in the assessment of in-combination effects are listed in Appendix 5. This includes consideration of agriculture and forestry and other developments including the permitted Fahybeg and Carrownagowan windfarms, and the proposed Oatfield and Ballycar Windfarms. I note that although the proposed Knockshavno Windfarm was considered, it was not included in the assessment of in-combination effects as it was at 'pre-planning stage'. The proposed Knockshavno Windfarm consists of 9no. turbines approx. 5km west of the project site and an application for this project was subsequently lodged with the Board on 30/08/2024 (ABP-**320705-24** refers). I have examined the EIAR, AA Screening Report and NIS for the Knockshavno windfarm project. The AA Screening report for the Knockshavno project identified that the potential for likely significant effects, including in-combination effects, on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA could not be excluded. Chapter 9 of the EIAR (Knockshavno) concludes that the main likelihood of cumulative effects is associated with surface water quality and that the Lackareagh Windfarm is outside of the cumulative study area with no potential for hydrological cumulative effects to occur due to a lack of hydrological connectivity. I further note that the NIS (Knockshavno) concludes that with the mitigation measures prescribed to block the potential for adverse effects to the said SAC and SPA, that there is no potential for in-combination effects. Having regard to same, and on the basis that the applicant has demonstrated that no significant residual effects will remain post the application of mitigation measures in respect of the proposed Lackareagh development, I am satisfied that there is no potential for in-combination effects on the Lower River Shannon SAC.

Findings and conclusions

The applicant determined that following the implementation of mitigation measures the construction, operation and decommissioning of the proposed development alone, or in combination with other plans and projects, will not adversely affect the integrity of this European site.

Based on the information provided, I am satisfied that adverse effects arising from the proposed development can be excluded for the Lower River Shannon SAC. No direct impacts are predicted. Indirect impacts would be temporary in nature and mitigation measures are described to prevent ingress of silt laden surface water, other construction related pollutants and disturbance. Monitoring measures are proposed. I am satisfied that the mitigation measures proposed to prevent such effects have been assessed as effective and can be implemented and conditioned if permission is granted.

Reasonable scientific doubt

I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site integrity

The proposed development will not affect the attainment of the Conservation Objectives of the Lower River Shannon SAC. Adverse effects on site integrity can be excluded and no reasonable scientific doubt remains as to the absence of such effects.

Appropriate Assessment Conclusion: Integrity Test

In screening the need for Appropriate Assessment, it was determined that the proposed development could result in significant effects on Lough Derg (Shannon) SPA, River Shannon and River Fergus Estuaries SPA, Glenomra Woods SAC AND Lower River Shannon SAC in view of the conservation objectives of those sites and that Appropriate Assessment under the provisions of S177U was required.

Following an examination, analysis and evaluation of the NIS, all associated material submitted, and taking into account observations on nature conservation, I consider that adverse effects on site integrity of the Lough Derg (Shannon) SPA, River Shannon and River Fergus Estuaries SPA, Glenomra Woods SAC AND Lower River Shannon SAC can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

My conclusion is based on the following:

- Detailed assessment of construction, operational and decommissioning impacts.
- The respective site-specific conservation objectives, targets, attributes, QI's and SCI's of the respective European Sites as detailed and assessed in my Stage 2 AA as appended to this report (Appendix 2).
- The proposed development will not affect the attainment of conservation objectives for the Lough Derg (Shannon) SPA (004058), River Shannon and River Fergus Estuaries SPA (004077), Glenomra Wood SAC (001013) or the Lower River Shannon SAC (002165) or prevent or delay the restoration of favourable conservation condition for Cormorant or Common Tern (Lough Derg (Shannon) SPA, or Sea Lamprey, Atlantic Salmon, Atlantic Salt Meadows, Otter, Mediterranean Salt Meadows, Alluvial Forests with *Alnus Glutinosa* and *Fraxinus excelsior* (Lower River Shannon SAC) .
- Effectiveness of mitigation measures proposed in relation to water quality, tree felling, earthworks and construction activities, borrow pit, settlement ponds, hydrocarbons, cement products, wastewater and morphological changes to watercourses which are primarily captured within the CEMP which will govern the construction of the project under the supervision of an appropriately qualified project ecologist with supporting hydrological engineer.