An Bord Pleanála

Inspector's Report ABP 317227-23

Development	10-Year Planning Permission sought for the development of a wind farm together with the development of an underground grid connection cable to the national grid. The development will consist of 8 wind turbines, a permanent meteorological mast, an on-site 38kV electrical substation, and all associated site works. An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) have been submitted with the application.
Location	Fahy Beg, Fahy More N, Ballymoloney, Ballyknavin, Ballyquin More, Woodpark, Leitrim, Fahy More S, Ballybrack, Aharinaghmore, Tooreen, Aharinaghbeg, Knockdonagh, Roo E, Blackwater, Rosmadda West, Parkroe, Lacklyle, Castlebank and Ardataggle, Co. Clare.
Planning Authority	Clare County Council.
Planning Authority Reg. Ref.	23148

Applicant(s)	RWE Renewables Ireland Limited.
Type of Application	Wind Energy
Planning Authority Decision	Refuse Permission
Type of Appeal	First Party
Appellant(s)	RWE Renewables Ireland Limited.
Observer(s)	1. Karl Skehan 2. Hazel Mitchell 3. Iziar Sarasola 4. Gerard Cagney 5. John Ryan 6. Patrick Hayes 7. Mary Ryan 8. Hilary McAlea 9. Konrad Rumberger 10. Ann Meehan 11. Elaine O'Brien 12. Aidan O'Brien 13. James Lowry 14. Patrick and Nicole Kennedy 15. Sinead Hynd 16. Brendan Sweeney 17. Patrice McAuliffe 18. Stephen Thornton 19. Aine Sweeney 20. Ciara Byrnes 21. Conor O'Brien 22. Tony O Brien

23. Joe English
24. Paraic Boland
25. Padraig Gunning
26. Orlaith Nihill
27. John Barrett
28. Timmy Dooley
29. Jane Byrne
30. Tadhg Nihill
31. Christopher Weldon
32. Ann Barron
33. Paul Butler
34. Rebecca Hussey
35. Eoghan Nihill
36. Sarah Nihill
37. Deidre Nihill
38. Jim Bolton
39. Fergus Houlihan
40. Michael Duffy
41. Fahybeg Windfarm Opposition Group
42. Gillian Quin
43. Noreen Skehan
44. Joan Dunne
45. Ed Bourke
46. James Greene
47. Eugene Quin
48. Mike Dunne
49. Paul Ryan
50. Marie Ryan

51. Jim Ryan
52. Terese O'Donoghue
53. Francis Maloney
54. Seamus Wolfe
55. Kevin Wolfe
56. Batt Shehan
57. Rebecca Simons
58. Joane Skehan
59. Denis Dillon
60. John Moroney
61. Peter Maloney
62. Liam Hession
63. Eric O'Connell
64. Nellie Skehan
65. Macartan Skehan
66. Sean Conway
67. Aoife Hickey
68. James Skehan
69. Ita Bolton

Date of Site Inspection	1st November 2023.
Inspector	Brendan Coyne

Contents

1.0 Site Location and Description

1.1.1. The site is located in the eastern part of County Clare, c. 10 km north of Limerick City and c. 6 km south-west of Killaloe. Bridgetown is located 1.1km to the south and O'Briensbridge is located c. 2.9km to the south-east of the site. Kilmore is located c. 2.9km to the south-west and Kilbane is located c. 2.1km to the north-west. The proposed turbines are situated on the southern face of Lackareagh Mountain, which is the southernmost extension of the Slieve Bearnagh Mountains. The proposed development is located in the townlands of Fahy Beg, Fahy More North, Ballymoloney, Ballyknavin (Ed O'Briensbridge), Ballyquin More, Woodpark, and Leitrim in County Clare. The site comprises agricultural land with extensive areas of coniferous and mixed leaf woodland. The surrounding area is characterised by one-off rural housing and farmyards generally located along the road network. High voltage ESB lines and pylons traverse lands to the north of the site.

1.1.2. The proposed grid connection route (GCR) is located in County Clare and crosses the townlands of Leitrim, Fahy More South, Ballybrack, Aharinaghmore, Tooreen (Ed Cloghera), Aharinaghbeg, Knockdonagh, Roo East, Blackwater, Rosmadda West, Parkroe, Lackyle (Ed. Ballyglass) and Castlebank. The proposed grid connection will connect the onsite substation to the existing Ardacrusha 110kV substation. From Ardnacrusha, the route follows the L3056 eastwards to Barry's Cross where it joins the R465 heading north. The GCR continues along the R465 until Carmody's Cross where it turns east to join the R471 until Harol's Cross. From Harol's Cross, the GCR follows local roads northward until the R466. On meeting the R466 the GCR continues north-west until the existing quarry entrance/proposed development site entrance. The route then travels along the existing quarry access road northwards before turning back south-east to enter the agricultural field where the proposed onsite substation is located.

1.1.3. The turbine delivery route (TDR) traverses counties Kerry, Limerick, Tipperary and Clare. The route commences at the Port of Foynes and follows the N69 eastwards before joining the N18/M7 travelling east and then north until M7 Junction 27 Birdhill. The route then follows the R494 towards Killaloe. The route will cross the Shannon via

the Killaloe bypass bridge (currently under construction) and then run south-west along the R463 to O'Briensbridge. At O'Briensbridge Cross the route turns right and follows the R466 to the proposed site. Access to the wind farm site will be made through the existing Roadstone quarry on the R466 to the southwest and two proposed entrances on the Fahymore local road. There are 2 no. 110kV transmission lines crossing the site, one of which traverses the Central Parcel and the other which crosses the South-Eastern Parcel from the existing 110kv Tullahennel Substation located c. 7km northeast of the site. There are seven recorded archaeological sites located within the site boundary and an additional eighteen are identified within a 1-kilometer radius. The sites within the development area comprise five enclosures: two are situated within the quarry at the site's western end (CL044-073 and CL044-074), two lie in pasture fields near the northern and southern boundaries (CL044-062 and CL044-077), and one is in a clearing in the eastern forestry plantation (CL044-067). Also recorded is a children's burial ground (CL045-052001-) accompanied by a bullaun stone (CL045-052002-) near the site's eastern edge. Glenomera House (RPS 427), a derelict early 20th-century single-story house, stands c. 560 meters to the west of the site's boundary.

2.0 **Proposed Development**

2.1. 10-year planning permission is sought to construct a windfarm with a 30-year operational life. The proposed windfarm will consist of the following:

- Construction of 8 no. wind turbines with a blade tip height range from 169m to 176.5m, a hub height range from 102.5m to 110m and a rotor diameter range from 131m to 138m;
- Each wind turbine will be supported by a reinforced concrete base pad foundation measuring c. 25 meters in diameter and a maximum excavation depth of c. 3.5 meters below ground level.
- Erection of 1 no. permanent meteorological mast to a height of 100m above ground level, to monitor the local wind regime.
- Construction of 1 no. on-site 38kV electrical substation;

- Installation of medium voltage electrical and communication cabling underground between the proposed turbines and the proposed on-site substation with associated ancillary works.
- 2 no. temporary construction site compounds with associated ancillary infrastructure, including parking, welfare facilities, wastewater holding tank, rainwater harvesting tank, security fencing, and all associated infrastructure.
- Construction of new site tracks and associated drainage infrastructure;
- Upgrading of existing tracks and associated drainage infrastructure where necessary;
- Access from the R466 local road to the proposed wind farm site through an existing quarry entrance in the townland of Leitrim (to be upgraded), 1 no. new permanent site entrance on the Fahymore local road in Ballyquin More, and an existing field entrance in Ballymoloney to be upgraded. The site entrances will be used for both construction and operation of the proposed wind farm,
- Installation of medium voltage (38kV) electrical cabling and communication cabling underground primarily along existing roads between the proposed on-site substation and the existing 110kV Ardnacrusha substation, spanning c. 10.6 km, and associated ancillary works.
- Installation of new watercourse and drain crossings and upgrading of existing internal watercourse and drain crossings.
- The proposed grid connection cable works includes 4 no. watercourse crossings by horizontal directional drilling within the public road corridor in the townlands of Parkroe, Blackwater, Knockdonagh, Aharinaghbeg, Tooreen (Ed Cloghera), Fahy More South and Leitrim and the installation of 14 no. pre-cast joint bays and communication chambers.
- Tree felling to facilitate the construction and operation of the proposed development.
- Temporary accommodation works, to facilitate the delivery of wind turbine components.

- Temporary works at 2 no. sections of the R466 in Ardtaggle to facilitate the delivery of turbine components.
- Biodiversity enhancement of lands, comprising 3.1 hectares of oak woodland replacement planting in the elevated northern area of the site
- The application seeks a ten-year planning permission and a 35-year operational life from the date of commissioning.
- The estimated Export Capacity (MEC) of the development is expected to be between 31.2 – 38.4 MW.
- An Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) have been prepared for the proposed development.

2.2. **Appendices**

2.2.1. The application is accompanied by the following documents:

- Construction and Environmental Management Plan (CEMP), including - a Dust Management Plan, Biodiversity / Flora and Fauna Management Plan, Soil management Plan, Surface Water Management Plan, Archaeological Management Plan, Waste Management Plan and Traffic Management Plan
- Biodiversity Enhancement and Management Plan (BEMP)
- Safety & Health Management Plan
- Emergency Response Plan
- Schedule of Environmental Commitments and Mitigations Measures
- 38kV Grid Connection Outline Construction Methodology
- EIAR Scoping Response
- Carbon Calculator Inputs
- Baseline Noise Measurements
- Equipment Calibration Certificates
- Noise Sensitive Location Details
- Sound Power Level Data for Wind Turbines

- Predicted Noise Levels from Fahy Beg Wind Farm with mitigation at Nearby Noise Sensitive Locations
- Ornithology Report
- Habitat Survey Report
- Bat/Otter GCR Surveys Report
- Bat Report
- Aquatic Ecology Report
- Marsh Fritillary Report
- Ecological Resource Evaluation
- Invasive Species Management Plan
- Confidential Appendix: Badger Report
- Geotechnical Assessment Report
- Factual Ground Investigation Report
- Trial Pit Logs for Proposed Substation Locations
- Field Assessment Observations
- Model Input Data
- Theoretical Shadow Flicker Times - Scenario 1
- Shadow Times per Receptor - Scenario 1
- Theoretical Shadow Flicker Times - Scenario 2
- Shadow Times per Receptor - Scenario 2
- IFP Safeguarding Scoping Assessment

3.0 Planning Authority Decision

3.1. Decision

Clare County Council REFUSED permission for the proposed development. The reasons for refusal were as follows;

1. *Having regard to the location of the site on lands identified as 'Open to Consideration' for windfarm developments as set out in the Clare Wind Energy Strategy and the County Development Plan 2023-2029, the Planning Authority considers that the proposed turbine structures, by reason of their height (tip height up to 178m), scale and siting on this open and exposed upland landscape would constitute a prominent feature on the landscape from both local and long range viewpoints. 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 alter the character of this rural landscape. The proposed development would therefore seriously injure the visual amenities of the area, would contravene Objectives CDP14.2 and CDP14.7 of the Clare County Development Plan 2023-2029 and would be to the proper planning and development of the area.*

2. *It is an objective of the Clare County Development Plan, 2023-2029, as set out under Objective CDP11.47(e) to strike an appropriate balance between facilitating renewable and wind energy related development and protecting the residential amenities of neighbouring properties. Having regard to the scale and height of the turbines as proposed, the location of the site in this open landscape, the noise impacts that would be generated from this development and the significant volume of traffic movements required to facilitate the construction process, it is considered that the proposed development would seriously injure the amenities of residential property in the vicinity by reason of noise and disturbance. Furthermore, it is considered that the proposed turbines would be visually overbearing on existing properties and thus depreciate the value of property in the vicinity. The proposed development would therefore be contrary to Objective CDP11.47 of the Development Plan and be contrary to the proper planning and development of the area.*

3. *The plans, assessments and reports submitted with the planning application have not demonstrated adequate proposals for the removal, storage and general management of the substantial volume of excavated soils and materials during the construction phase of the development. This results in a significant consequent concern in relation to surface water management and the potential contamination of waterbodies both within and downstream of the proposed development site.*

Under Article 5 of the European Communities Environmental Objectives (Surface Waters) Regulations, 2009, as amended, a public authority, in the performance of its functions, shall not undertake those functions in a manner that knowingly causes or allows deterioration in the chemical or ecological status of a body of surface water. On the basis of the information submitted with the application to date it is considered that the proposed development would present a significant risk of adverse environmental impact on the sensitive natural habitats of the site and of the wider area, constituting an unacceptable risk of pollution of watercourses in the area and seriously injuring the amenities of the area. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the Clare area.

4. *The Planning Authority notes that there is hydrological connectivity between the proposed development site and both the Lower River Shannon cSAC, and the River Shannon and River Fergus Estuaries SPA. The majority of the habitats and species for which both European sites are designated are water- dependent habitats and species with requirements for high to pristine water quality.*

   Having regard to the inadequate proposals for management of the excavated soils and materials on the proposal site, the absence of coordinated approach to sizing of stilling ponds and definition of their location relative to sensitive water bodies; absence of consideration of other developments likely to give rise to cumulative impacts on the receiving environment; absence of adequate definition of tree felling/hedgerow removal and replacement planting; and, absence of consideration of invasive species in the footprint of the work areas in the wind farm there is an inherent risk to the Qualifying Interests and Special Conservation Interests of these European Sites which have not been adequately addressed in the Natura Impact Statement. As a result of the foregoing issues, the Planning Authority cannot conclude a finding of no adverse effects on the integrity of the associated European sites, the proposed development would be contrary to Objective CDP15.3 of the County Development Plan and contrary to the proper planning and sustainable development of the area.

5. *It is an objective of Clare County Council, under Objective CDP15.12 of the Clare County Development Plan 2023-2023 to inter alia to promote the conservation of*

biodiversity through the protection of sites of biodiversity importance and wildlife corridors, both within and between the designated site and the wider plan area.

Having regard to the species and habitats data submitted with the application, the high level of usage of the site by multiple animals (including bats) and bird species, the particular biodiversity value of Ballymoloney Wood, and the likely impacts of the proposed development on same, the Planning Authority considers that the proposed development would significantly diminish the biodiversity value of the area, would be contrary to Objective CDP15.12 of the Clare County Development Plan 2023-2029 and would contrary to the proper planning and sustainable development of the area.

3.2. Planning Authority Reports

3.2.1. Environmental Impact Assessment

3.2.2. The Planning Authority examined and summarised each chapter of the Environmental Impact Assessment Report (EIAR), highlighting its key concerns and areas of acceptability where applicable. For the sake of brevity, only the primary issues or acceptable aspects raised by the Planning Authority in its environmental impact assessment of the EIAR are noted in the following sections.

3.2.2.1. *Chapter 2 - Site Selection and Alternatives Considered:*

- While alternative layouts within the selected site were explored, the report does not indicate consideration of alternative sites.
- The absence of a comprehensive constraints study within the site, explaining the logic behind the chosen turbine locations, is noted.

3.2.2.2. *Chapter 3 - Description of the Proposed Project:*

- It's noted that the turbines are labelled differently in the EIAR compared to the main planning drawings. The EIAR numbering for turbines differs from the drawings provided in the application dated 02/11/2022. For example, T3 in the EIAR corresponds to T8 in the drawings, and so on.

- The chapter discusses waste management aspects of the project. It mentions that the two facilities intended for sending landfill waste are no longer operational.

3.2.2.3. ***Chapter 4 - Policy:***

- It's noted that the application was submitted to the Planning Authority on 09th March 2023, and subsequently, the new Clare County Development Plan 2023-2029 has come into effect. This new Development Plan has brought about changes in county-level planning policies.
- Despite changes in the county-level planning policies, it's stated that no alterations have been made to the Wind Energy Strategy associated with the adopted plan.

3.2.2.4. ***Chapter 5 - EIA Scoping, Consultation, and Key Issues:***

- The chapter outlines the community consultation and public information events that were conducted as part of the project. It's noted that some individuals who submitted third-party observations on the proposal expressed concerns about the adequacy of public consultation. They felt that the consultation process should have been extended to a wider area surrounding the development site. The submission from the National Environmental Health Office regarding this matter is acknowledged.
- Overall, the Planning Authority considers that the scoping and consultation process was deemed adequate. However, there are concerns raised regarding how the information obtained through the scoping process was integrated into the design of the proposal.

3.2.2.5. ***Chapter 6 - Air and Climate:***

- The Planning Authority report recommends that the assessment of potential local impacts, especially the air quality impact assessment, should be revised to address a worst-case scenario regarding the movement of HGVs during the initial six months of site construction works. The revised assessment should also include mitigation measures to address noise and dust issues likely to be associated with the significant movement of HGVs during this period.

3.2.2.6. ***Chapter 7 - Noise and Vibration:***

- The Planning Authority report notes that the existing wind energy guidelines in place date from 2006 and have not yet been updated to reflect changes in technology and turbine heights proposed in this and other applications.
- Both construction and operational phase noise and vibration impacts are considered in the EIAR. Background noise surveys were conducted as part of the assessment, and over 40 noise-sensitive locations are identified.
- The EIAR assesses potential noise associated with wind speeds between 3-12m/sec but doesn't provide an assessment of potential noise emissions between 12-25m/sec, even though the cut-in wind speed is 3m/sec and the cut-out wind speed is 25m/sec. This omission is noted as a concern, given the range of wind speeds at which the turbines are activated.
- The EIAR describes the phenomenon of Other Amplitude Modulation (OAM) but notes that there is no method for predicting OAM until the turbines begin operating, and it's considered rare. The Planning Authority report is critical of the lack of quantification of the potential observation distance for OAM.
- Baseline night-time noise levels in the rural area are low, and the EIAR uses a prescriptive night-time noise limit of 43dB to define a no-impact/no-mitigation requirement. However, the Planning Authority report suggests that receptors may notice a significant difference in night-time noise regardless of any prescribed limit. The Planning Authority recommends providing a clear indication of the difference between current noise levels in the area and projected noise levels with turbines operating at various wind speeds.
- Regarding residual impacts, the EIAR states that cumulative operational noise levels from the proposed wind farm meet the daytime and nighttime noise levels derived using the Wind Energy Development Guidelines 2006, which is not considered a significant impact. However, for some receptors, a new source of noise will be introduced into the soundscape, leading to a slight to moderate significance of impact. Dwellings closest to the project are expected to have a long-term moderate significance of impact.

- Noise associated with heavy goods (HGV) movements in the construction phase needs to be included in the assessment, with mitigation measures to address it.
- Overall, the Planning Authority expresses dissatisfaction with the assessment and mitigation of noise-related impacts during both the construction and operational phases of the development. The Environmental Health Officer of the HSE also raises concerns about the noise-related assessment in the EIAR. There is uncertainty regarding noise impacts from the development, including the impact of Other Amplitude Modulation (OAM). The Planning Authority report suggests that full impacts should be known before granting permission, and proposed further noise operational surveys post construction and mitigation measures are deemed inadequate.

3.2.2.7. ***Chapter 8 - Biodiversity:***

- The EIAR assesses the extent of loss and impact for all habitat types within the site, including hedgerows and tree lines.
- Of note, between 920m and 1098m of hedgerows and between 190m and 206m of tree lines will be lost within the development footprint. This represents a long-term moderate reversible effect and a long-term slight reversible effect, respectively, both at a local scale.
- The NPWS's pre-application scoping consultation advised prioritizing avoidance and mitigation by design. The fauna surveys indicated significant species diversity, particularly in the Ballymoloney wood area, and the proposed layout of turbines appears to encroach into this ecologically sensitive area, interrupting the transition between open grassland and woodland.
- The Biodiversity Enhancement Management Plan proposes 3.1 hectares of oak woodland replacement planting in the elevated northern area of the site, which is significantly less than the 14.2 hectares proposed for felling, raising concerns about an equivalent replanting area.
- It's suggested that an Arboricultural Impact Assessment should be included to identify the physiological condition and age of the trees proposed for removal, specifically in the southeast side of Ballymoloney wood.

- Concerns are expressed about significant disturbance to the badger population in the area adjacent to agricultural lands and the potential risk of an increase in Bovine TB.
- Limited mitigation by design for bats is shown in the construction and operation proposals but is spread throughout appendices and ancillary reports, making it challenging to integrate into the EIAR.
- Without mitigation measures, the EIAR concludes there will be significant adverse regional impacts on bat populations, including common pipistrelle, soprano pipistrelle, Leisler's Bat, and Nathusius' pipistrelle. Proposed mitigation measures indicate a 50% reduction in fatalities, but other mitigation measures are not well described in the main text.
- The Biodiversity Enhancement Management Plan includes mapped data and an inventory of replacement planting, which should be integrated into the main text of the EIAR to provide a coherent description of proposed mitigation measures.
- A 50m separation distance between turbine blade tips and nearest woodland or key habitat features is proposed as a mitigation measure. However, the principle of avoiding ecologically sensitive areas should guide the site layout before applying mitigation measures.
- The impact on target avifauna, such as Hen Harrier, is considered. While survey data did not indicate a significant presence of Hen Harrier at the site, questions are raised about changes in habitat suitability and potential increased usage of the site by Hen Harriers during construction and operation. Mitigation for this is not provided.
- Concerns about Kestrel populations, particularly their flight patterns and potential collision risk, are raised based on observations during vantage point surveys.

3.2.2.8. ***Chapter 9 Land, Soils, and Geology***

- The ElAR confirms the absence of significant peat deposits on the site, with peaty topsoils identified but not considered as peat deposits, resulting in the exclusion of a peat stability analysis.

- Geological survey data (GSI Landslide Susceptibility Database) indicates areas of 'Low' to 'Moderate High' landslide susceptibility, with some localised areas classified as 'High,' primarily in the northwest corner of the site.
- Approximately 86,400m^2 of subsoils will be excavated for construction, and over 150,000m^3 of fill material will be needed. Surplus topsoil and spoil will be stored in berms for reinstatement around turbine bases, hardstands, and access roads, with a height limit of 1m, shaped and sealed to prevent water ingress.
- Imported aggregate sources for construction are identified as Ballycar Quarry, Ardnacrusha (Bobby O'Connell), McGrath's Quarry, O'Callaghan's Mills, and Roadstone, Bunratty.
- Most potential impacts relate to the construction phase, with few associated with decommissioning. No operational phase impacts on geological and hydrological conditions are noted.
- Concerns about groundwater contamination and impacts on local drinking water supplies were raised in third-party observations.
- Table 9-16 of the ElAR indicates a moderate risk of groundwater pollution due to various construction activities.
- Mitigation measures for identified impacts are outlined in the ElAR, including restricting work to wetter months due to ecological considerations, management of spoil heaps, and creation of berms alongside access routes.
- The overall management of spoil heaps is not defined in the EIAR.
- The Planning Authority identifies the need for a clearly defined overall management plan for spoil heaps, considering site gradient and surface water bodies, and a temporary spoil storage location plan with pollution prevention measures.
- The ElAR should address the volume of spoil generated during construction and define suitable temporary spoil storage areas with pollution prevention measures.
- Intrusive site investigations corroborate GSI desk study findings regarding tills derived from Devonian sandstone and shales, but there is no reference to turbine height in the stability survey scope.

- The height of the turbines is not considered in the assessment of foundation and stability. Because the proposed turbines are taller than those installed on other sites, it is advisable to double-check the scope of the stability survey in terms of foundation depth and stability, as well as turbine height.

3.2.2.9. ***Chapter 10 Hydrology and Water Quality***

- Rehabilitation work on the Black River in 2020 is not referenced in the EIAR.
- No site-specific drainage network mapping is provided, and there is a lack of peak flow data relative to the 3 sensitive streams within the site.
- The steep gradient, existing field drains, and peak flow data need to be integrated into stilling pond design and spoil management.
- Mitigation measures mentioned lack specific details regarding their implementation.
- The surface water management plan (Appendix 10.2) needs to integrate stilling pond dimensions, site drawings, surface water bodies, and buffer zones.
- The ElAR mentions maintaining existing drainage patterns but does not provide a drainage design.
- A comprehensive drainage design that considers site infrastructure, existing surface waters, field drains, and gradient should be incorporated into the site design.
- Clear presentation of site drainage, including settlement ponds and critical infrastructure, and buffer zones between surface waters and works areas is required to ensure their adequacy and protection of existing surface water systems.
- The Planning Authority expresses dissatisfaction with the surface water management and water quality protection addressed in the ElAR.

3.2.2.10. ***Chapter 11 - Population, Human Health, and Material Assets***

- The Planning Authority notes the submission from Failte Ireland, emphasising the scenic nature of the site and its importance to tourism in the Hidden Heartlands region. They highlight that this region designation is not assessed in the ElAR.

- The Planning Authority notes that issues assessed in this chapter, such as property devaluation and impacts on local amenities and tourism, were frequently raised in third-party observations.
- Local walking trails developed with assistance from Clare County Council, directly impacted by the wind farm, are not considered in the EIAR.
- The assessment of economic impacts is criticised for not adequately evaluating the effects on small local businesses and the tourism economy. It is limited to the impact of the community benefits fund.
- Population impact analysis is limited to changes associated with construction and operation phases, omitting analysis of the project's attractiveness as a place of residence in the area.
- The Planning Authority suggests that the chapter, particularly concerning population and material assets, should be considered alongside noise, visual impact, and other relevant chapters.

3.2.2.11. ***Chapter 12 - Shadow Flicker***

- The Planning Authority acknowledges the information provided regarding shadow flicker and has assessed it. The Planning Authority consider the proposed mitigation measures to be adequate and in line with industry standards. Based on the available mitigation measures, the Planning Authority does not anticipate that shadow flicker from this development would significantly impact the residential amenities of surrounding properties.

3.2.2.12. ***Chapter 13 - Traffic and Transportation***

- The Planning Authority notes the report received from the Road Design Office of Clare County Council, which emphasises the need for a Traffic and Transport Assessment.
- Concerns are also raised regarding changes in roundabout layouts related to the Killaloe bypass, potential cumulative impacts, impacts on cyclists and pedestrians, timing of work, the adequacy of the Traffic Management Plan, the assessment of

30,000 HGV movements on residential amenities, and general concerns about traffic associated with the proposed development.

3.2.2.13. ***Chapter 14 - Archaeology, Architectural, and Cultural Heritage***

- The Planning Authority acknowledges the submission from the Development Applications Unit (DAU), which supports the archaeological mitigation strategy and recommends including related conditions.
- A third-party observation was received, indicating that a Protected Structure in the village was excluded from consideration in the EIAR. While this structure is not within the 1km study site, it is further considered in the Visual Amenities section of the Planning Assessment.

3.2.2.14. ***Chapter 15 - Landscape and Visual Impact Assessment***

- The Planning Authority expresses concerns about views of the proposed development from the R466 Scenic Route. However, the EIAR contends that all views from this route have a similar context, with clear views of the turbines rising from the forested slopes of Lackereagh Beg Hill. The EIAR submits that the wind turbines are not perceived as out of scale or context, and their presence does not significantly harm visual amenity.
- The Planning Authority has considered all the information regarding the potential visual impact of the proposed development, taking into account concerns raised in third-party observations. The Planning Authority has significant concerns related to site selection, site layout, overdevelopment design, and the potential visual impact of the project on the receiving environment. These concerns have not been adequately addressed by the information provided in the EIAR.

3.2.2.15. ***Chapter 16 - Telecommunications and Aviation***

Aviation:

- The Irish Aviation Authority submitted two responses regarding the application. While they requested advance notice of crane operations, they did not raise objections to the proposal.

Telecommunications:

- The EIAR states that during the EIS scoping stage, consultations were conducted with national and regional broadcasters, fixed-line and mobile telephone operators, and other relevant operators to assess the potential for electromagnetic interference caused by wind farm development. These agencies and companies confirmed that the turbines would not interfere with their services.
- There is a potential for interference with digital terrestrial television, and the relevant operator has requested that the wind farm operator agree to their protocol to address this issue.

3.2.2.16. ***Reasoned Conclusion:***

Having considered the assessment and information provided in the EIAR, as well as submissions from prescribed bodies and third parties, the Planning Authority has identified the following significant direct and indirect effects of the proposed wind farm development on the environment:

- Site Selection and Turbine Arrangement: The site selection process and the arrangement of turbines on the site, including their height and scale, elevated positioning, and their visibility from various viewpoints, have significant impacts on the landscape.
- Impacts on the Landscape: The height, scale, and positioning of the turbines, as well as their visibility from local and long-range views, have significant impacts on the landscape.
- Impacts on Population and Human Health: During the construction phase, there are potential impacts on population and human health due to noise and traffic nuisance. During the operational phase, noise can also affect human health.
- Impacts on Water Quality: Inadequate management of the extensive excavation of subsoil/material during construction may result in impacts on water quality.
- Impacts on Biodiversity: The development's proximity to Ballymoloney Wood, high bat activity, potential effects on bird species (including Kestral, Sparrowhawk, etc.), potential bird-turbine collisions, species displacement, and barrier effects on dispersal or migration have significant impacts on biodiversity.

3.2.3. **Natura Impact Statement**

3.2.4. The Planning Authority conducted a Screening for Appropriate Assessment (AA) regarding the proposed development. Having regard to the Screening Report for AA submitted, the Planning Authority was unable to determine that the proposed development would not have a significant impact on European sites; therefore, an Appropriate Assessment or Natura Impact Statement (NIS) was deemed necessary. The Planning Authority provides a summary of the Natura Impact Statement. Key issues raised include the following:

- Concerns were raised by the Development Applications Unit of the Department of Housing, Local Government, and Heritage, as well as the Council's Commissioned Environmental Assessment Officer.
- The primary concern relates to how spoil and surface water are managed during construction, which might affect downstream water quality. Without data on spoil management, proper planning for stilling ponds, considerations for cumulative impacts, clarity on tree/hedgerow alterations, and attention to invasive species within the wind farm work areas, these issues remain unresolved.
- Due to these concerns and the absence of critical information, the Planning Authority, as the competent authority in the appropriate assessment process, could not determine that the proposed development would not have an adverse effect on European sites.

3.2.5. **Overall Planning Assessment**

3.2.5.1. ***Principle of Development:***

- Relevant policy in the Development Plan supporting renewable energy development as part of a transition towards a low carbon economy stated.
- The proposed development must be assessed in the context of environmental, visual, and community impacts and constraints, and in accordance with the Wind Energy Strategy of the Clare County Development Plan.
- It's noted that this strategy has been in place since 2009 and updated Departmental Guidelines on Wind Energy Development have not been published to date.
- In accordance with the Wind Energy Strategy, areas identified as 'Strategic' or 'Acceptable in Principle' are preferred locations for wind energy developments.

- The proposal site is located in an area that is Open for Consideration for wind energy developments.
- Under Objective WES10 of the Wind Energy Strategy, wind energy applications in these areas will be evaluated on a case-by-case basis, subject to viable wind speeds, environmental resources, constraints, and cumulative impacts.
- Key issues such as the wind resource, residential amenities, landscape and visual impacts, landslide susceptibility, and potential impacts on tourism, recreation, and amenities must be evaluated before a wind energy development can be deemed acceptable.
- These key issues are elaborated further in the ElAR assessment, NIS assessment, and planning assessment sections of the Planning Authority report.
- There are significant concerns in relation to the suitability of the proposal site, primarily related to visual impact, traffic impact, impacts on water quality, and impacts on residential amenity.
- The Planning Authority is not satisfied that the principle of a wind energy development at this location is acceptable.

Planning Status of the Proposal Site:

- Some of the third-party observations received questioned the planning status of the Roadstone Quarry in Ballyquin, in which some of the application is situated.
- The quarry has a lengthy planning history.
- Key points to note are the outcome of the Section 261 and 261A processes, Substitute Consent ref: SU0040, and planning permission P17/552.
- Under these processes/applications, it was determined that the quarry commenced operation pre-1964 but at the time of the Section 261 registration, the works on site were considered unauthorised.
- The Section 261A process required a more in-depth assessment of the quarry history.
- At the time of that assessment, the majority of the extractive activity of the site had ceased.

- The Planning Authority determined that two notable expansions of the quarry operations on the site had taken place since the EIA Directive and Habitats Directive took effect, and no assessment of the operations in the context of those legislative instruments had taken place.
- Substitute consent was sought and granted for the two relevant areas of the site.
- Under application 17/552, permission was granted for infilling works in one of the areas where substitute consent was granted, including entrance and access arrangements.
- The current proposal intends to utilise the entrance and part of the access road permitted under application P17/552.
- The arrangements also traverse the area where substitute consent was granted.
- There is no issue with the planning status of the former quarry at either of these two locations.
- A section of access road connecting the two aforementioned areas will pass through part of the Roadstone quarry where the planning status is less clear.
- This was a pre-1964 quarry, unauthorised works were carried out but have ceased for at least 10 years.
- No operations were taking place in this area when the site was inspected as part of the Section 261A process.
- Natural regeneration has taken place.
- The subject section of internal access road is included within the red line boundary of the application, and planning permission is sought for the required works under the current proposal.
- It is doubtful that the proposed works could be considered to compound an unauthorised use of the site when said use of the relevant areas has ceased for a considerable length of time.
- It is noted that the development description includes access via an existing quarry entrance.

- While the use of the term existing quarry could be construed as a statement of status, in this instance, it provides clarity as to the proposed location of the entrance.
- The Ballyquin Pit is a very well-known local landmark, and describing the proposed entrance arrangements as such would leave little doubt in the minds of local residents as to the intention in relation to access.
- Based on the foregoing, the Planning Authority is satisfied that the planning status of existing and former works of the Ballyquin pit does not undermine the principle of the current proposal.

3.2.5.2. ***Visual Amenities***

Turbine Location:

- The assessment considered various aspects, including the planning application, photomontages, the Landscape and Visual Impact chapter of the ElAR, site inspections, and third-party observations.
- The proposal site falls within an Area 'Open to Consideration' for wind energy developments under the Wind Energy Strategy (WES) for County Clare, which has been in place since 2009 and refers to turbine tip heights of 125m.
- The WES has been incorporated into subsequent Development Plans, including the recently adopted 2023-2029 Plan. Based on Circular PL 20-13, the publication of the new/finalised Section 28 wind energy guidelines is required before preparing a new or updated wind energy strategy.
- The proposal site is located in the Slieve Bernagh Uplands Landscape Character Area, with sensitivity noted in certain parts due to nature designations and scenic qualities.
- While some areas in this Landscape Character Area can accommodate large or medium wind farms, turbine prominence can be mitigated through careful site selection and layout.
- Concerns arise regarding the proposal's impact on the landscape, including views from the R466 Scenic Route, the adjacent village of Bridgetown, and locations in Birdhill and Montpelier/O'Brien's Bridge.

- Photomontages depict turbines emerging organically but do not fully represent landscape-altering elements such as access roads, tree clearance, and settlement ponds.
- It is considered that the proposed development significantly intrudes on the local landscape and contradicts the assertion that it would be an 'increase in diversity and scale of built development'.
- The proposed development is considered to have a substantial, adverse impact on visual amenities and contravenes Objective CDP14.7 - Scenic Routes of the Development Plan.
- There are potential repercussions for the local tourism industry, including affected walking routes.

Turbine Delivery Route:

- The impacts of the proposed development are extensively addressed in the EIAR, yet little to no consideration is given to the impacts of the works required to facilitate turbine delivery.
- Most works along the route involve tasks such as tree trimming and temporary signage removal. However, a significant amount of work is needed in the village of Bridgetown to enable turbine delivery, with specific reference to the works required at Node 31.
- Node 31, situated on the approach to Bridgetown village from the east, currently features a roadside boundary defined by a line of mature trees designated as Trees for Preservation in the Clare County Development Plan 2023-2029.
- Within the field boundary, the lands slope steeply uphill, creating a sense of enclosure and distinctive character on the approach to the village.
- To facilitate turbine delivery, roadside vegetation and trees will be removed, the embankment will be cut back and reprofiled, and the newly created roadside space will be finished with a load-bearing surface.
- The clearance of trees at this location would be contrary to the objectives of the County Development Plan, and the proposed works at Node 31 would fundamentally alter the character of Bridgetown village.

- These works also directly adjoin a designated Scenic Route and have not been adequately considered in the EIAR, raising concerns about their negative impact on the area's visual amenities.
- Considering the issues highlighted above regarding the visual impact, a recommendation for permission refusal is made.

3.2.5.3. ***Residential Amenities***

- Considering the noise considerations outlined in the assessment of the ElAR, the substantial rise in traffic linked to the proposed development, especially heavy goods vehicle (HGV) movements passing through local villages and taking into account the visual impact concerns mentioned previously, it is deemed that the proposed development will negatively impact the residential amenities of the area.

3.2.5.4. ***Other Issues***

Validation

- A third-party observation raised concerns regarding the validation process because the scanned version of submitted plans and particulars lacked a "received" stamp with the relevant date.
- It's noted that all drawings in the physical file have been date-stamped. Due to the application's voluminous nature and for efficient uploading, the Planning Authority chose to upload the files digitally. They assert that the drawings in the physical file have been correctly date-stamped.
- The elevational drawing of the turbine is mentioned, with an observation that there seems to be a relatively uniform design for the turbines.
- The development description as provided in the submitted documents and reports indicates that the 8 no. turbines have a blade tip height range from 169m to 176.5m, a hub height range of 102.5m to 110m, and a rotor diameter range of 131 m to 138m.
- Section 3.3.2 of the EIAR requests the Council to consider specific dimensions if it decides to grant permission based on fixed turbine dimensions.

- The submitted turbine drawing displays various turbine dimensions, and the Site Layout Plan references the finished floor levels of the turbines. It is concluded that there is sufficient information on file regarding the elevational drawings of the turbines for validation purposes.

Conclusion: Taking into account the information above, a recommendation is made to refuse planning permission for this development based on grounds related to principle/visual impact, residential amenity, and impacts on water quality/European sites.

3.3. **Other Technical Reports:**

3.3.1. **Burke Environmental Services – Commissioned Environmental Assessment Officer on behalf of Clare County Council**

3.3.2. Key comments and issues raised include the following:

3.3.2.1. ***Consideration of EIAR and Associated Documents for P23/148:***

- The proposed development site and its surroundings are not subject to any sensitive heritage designations, and there is no direct risk of habitat loss or fragmentation to European sites.
- The southwest side of the site comprises a section of the former Roadstone sand and gravel quarry at Ballyquin, providing main site access from the R466 (Broadford to Bridgetown Road) and accommodating the on-site substation and works compound.
- Turbines T1-T8 are accessed through the quarry site, with a site entrance on the eastern boundary of the quarry, opposite an existing farm entrance.
- The site area encompasses mixed-use land, including the quarry area (Ballyquin, Leitrim townlands), improved agricultural grasslands (Fahy Beg), mixed broadleaf woodlands (Ballymoloney wood and environs), conifer plantation (foothill of Lackareagh mountain), and some wet grassland (Fahy Beg).
- There are discrepancies in the EIAR. The site area is noted as 3.28 km² in Chapter 10 but is not clearly stated in the site description or any other section of the EIAR.

- The elevations of the eight proposed turbines (T1-T8) between 120m to 350m AOD are found in the Geotechnical Assessment report rather than the main site description.
- The proposed operating hours are inconsistent, with different sections of the reports providing varying hours of operation.
- Clarity and consistency in specifying the operating hours are needed.
- Figure 3-7 in the EIAR should be revised to accurately depict the location of existing permitted wind farms near the site.
- The EIAR lacks reference to the Bolton sand and gravel quarry located immediately southwest of the site. Moreover, it does not mention the existing permitted status of the Roadstone Ballyquin site as an inert waste recovery facility, as indicated at the gated entrance on the R466 (Permit reference WFP-CE-18-0002-01).
- Overall, Chapter 3 of the EIAR needs a comprehensive revision to provide a consolidated site description, including site area and elevations supported by contour maps, revised mapping of permitted developments in the area, including inert waste facilities, and acknowledgment of existing operating quarry facilities.
- The consideration of alternatives in the EIAR primarily addresses options within the site, such as with or without the wind farm, alternative turbine layouts, different turbine blade lengths and tip heights, and alternative connection and turbine delivery routes.

3.3.2.2. ***Scoping and Constraints Study:***

- The submitted information lacks evidence of an iterative development process for the proposed project, one that seeks to mitigate potential environmental effects through options appraisal, consultation, and feedback from various stakeholders, including public input.
- A robust constraints study is notably absent, and there is no clear rationale for the chosen turbine locations.
- The project layout does not appear to sufficiently account for early survey findings regarding the wind farm site, particularly in terms of turbine locations.

- Third-party submissions raised concerns related to the project, particularly the National Parks and Wildlife Service (NPWS), which emphasised prioritising avoidance and mitigation through design in accordance with National Biodiversity Action Plan guidelines.
- The fauna surveys, which influenced the turbine layout, notably postdate the definition of the site layout. This approach does not align with the requirements of the 2014 EIA Directive, which recommends that layout should be driven by ecological constraints. Geotechnical assessments conducted in August 2021 and June 2022 also appear to postdate the site layout definition.
- The numbering of turbines in the EIAR is inconsistent with the drawings prepared for the application. Therefore, a clear and logical description of the iterative process used to define the final layout, driven by constraints such as ecological, geological, amenity, access, and power output, is required.

3.3.2.3. ***Drainage Network Data:***

- The headwaters of the Black stream, Fahy stream, and Broadford streams fall within the proposed turbine network. It is noted that the Black River underwent rehabilitation work in 2020; however, this project is not referenced in the Environmental Impact Assessment Report (EIAR).
- Site-specific drainage network mapping, including sub-catchment drainage and field drains, is lacking in the EIAR. Moreover, there is no reference to peak flows, which are critical for organising work areas in relation to the three sensitive streams within the site.
- The steep longitudinal gradient, presence of field drains, and peak flow data must be integrated into the sizing and location of stilling ponds. Mitigation measures primarily involve ecological surveys before significant work begins rather than thoughtful design and avoidance of biodiverse areas.
- Details such as the location of drainage ditches, slopes, spoil heaps, and replanting areas are not found in the documents.
- The surface water management plan defines stilling pond dimensions but does not reference the surface water bodies, existing drainage network, or buffer zones

between drains and work areas. Chapter 3 of the EIAR mentions maintaining existing drainage patterns but does not provide drainage design, which is necessary to incorporate into the overall site design.

- No potential impact on groundwater is likely to be associated with the proposed development.
- While potential impacts on groundwater quality are considered limited due to the scope of excavation, the arrangement of site drainage, including settlement ponds and critical infrastructure, should be clearly presented with mapping of buffer zones between surface waters and work areas. This ensures the adequacy of design and protection of existing surface water systems, particularly in consideration of site gradient, weather conditions, rainfall events, spoil volume, and scope of works.

3.3.2.4. ***Management of Excavated Spoil:***

- The tree felling, construction of access roads, turbine hardstanding, turbine foundations, and cable trenches necessitate significant movement of topsoil and subsoil, mainly during the wetter months, due to ecological constraints associated with site biodiversity and layout.
- The construction works appear to be limited primarily to September and October, which may coincide with the wetter period of the construction year.
- An estimated volume of 86,400 m3 of material is mentioned in Table 9-11, Chapter 9 (EIAR). The NPWS consultation response advised prioritising avoidance and mitigation by design, emphasising careful assessment and management of soils on site, including detailed site drainage information.
- However, the management of spoil heaps is not clearly defined in the EIAR. Although borrow pits are not proposed, the reuse of excavated material on-site for landscaping and berms is indicated. Given the site's gradient and sensitive surface water bodies, the temporary spoil heaps need to be defined to ensure good site management and appropriate locations.
- The ongoing creation of berms alongside access routes is indicated, but this approach may not be sustainable or effective, especially given the site's characteristics.

- The EIAR should consider the volume of spoil generated during construction and its timing. A temporary spoil storage location plan is needed, with adequate pollution prevention measures, to prevent silt-laden stormwater discharge into surface water bodies.

3.3.2.5. ***Tree Felling and Associated Re-Planting:***

- The EIAR mentions 14.2 hectares of tree felling, including coniferous plantation at the northern end of the site. The Biodiversity Enhancement Management Plan identifies 3.1 hectares of replacement planting with oak woodland but does not provide a clear indication of a replanting area or an assessment of it.
- Considering the proposed 14.2 hectares of tree felling, an equivalent area of replanting should be provided, with clear identification of the replanting area. Alternative areas for replanting should also be defined in the EIAR.

3.3.2.6. ***Ballymoloney Wood:***

- The proposed provision of an access track on the southeastern side of Ballymoloney Wood requires an Arboricultural Impact Assessment. This assessment should identify the physiological condition and age of the trees planned for removal and provide a well-defined map of this area, indicating the number of mature trees to be cleared.

3.3.2.7. ***Noise Emissions:***

- Chapter 7 of the EIAR addresses potential noise arising from wind farm operation but primarily focuses on wind speeds between 3-12 m/sec. The cut-in wind speed is indicated as 3 m/sec, and the cut-out wind speed is 25 m/sec. However, there is no assessment of potential noise emissions between 12-25 m/sec.
- A complete assessment of potential noise emissions at the full range of wind speeds at sensitive receptors should be conducted.
- The EIAR describes the phenomenon of Other Amplitude Modulation (OAM) but refers to observations at "large distances" from the wind farm. The report should provide quantification of the potential observation distance to clarify the potentially

impacted area, considering the separation distance between sensitive receptors and turbines.

- Baseline nighttime noise levels in this rural area are low, with monitoring indicating L_{A90} 27-43 dB at wind speeds of 12 m/sec. The EIAR uses a prescriptive nighttime limit of 43 dB to define a no-impact/no-mitigation requirement. However, it is likely that receptors in existing low baseline noise areas will observe a significant difference in nighttime noise, irrespective of any prescribed limit.
- The EIAR should clearly indicate the difference between the current noise level in the area and the projected noise level with turbines operating at wind speeds of 3-25 m/sec, as indicated for turbine activity.

3.3.2.8. ***Dust and Noise Emissions from HGV Movements:***

- Dust and noise related to Heavy Goods Vehicle (HGV) movement during construction should be considered in the overall assessment.
- The traffic assessment presents data for 35,243 HGV movements as annual average data. However, based on the proposed construction schedule, these movements are likely to be concentrated more heavily during the first 6 months of construction, as indicated in Table 13-3 for site clearance, access road construction, turbine hardstanding, and foundations.
- Mitigation measures to reduce the impact of HGV movements on the local area should be included in the EIAR. Managing these movements for road safety and to minimise local noise and dust disturbance is critical.
- Mitigation measures could involve short-term storage of fill material within the existing footprint of the Ballyquin quarry site. This approach would allow for off-peak movement times and reduce local noise and traffic disturbance. However, this approach must be assessed comprehensively from an ecological and surface water perspective, considering sensitive receptors in the temporary storage area.
- The EIAR assessment of potential local impacts, particularly the air quality impact assessment, should be revised to address a worst-case scenario regarding the movement of HGVs during the first six months of site construction works. This assessment should include mitigation measures to address the noise and dust

likely to be associated with the significant movement of HGVs due to the construction schedule. This requirement may overlap with the assessment of traffic impact and can be incorporated with additional information if needed for road safety purposes.

3.3.2.9. ***Waste Management:***

- Table 3 in Chapter 3 (Page 37 of 38) should be amended to remove Doora Landfill and Long Pavement landfill, as neither of these landfills is operational.

3.3.2.10. ***Biodiversity:***

- The iterative approach to the location of infrastructure on the site is not guided on the basis of prioritising avoidance of ecologically sensitive areas.
- The overall layout of the wind farm (T1, T2, T5 and T6 as numbered in the EIAR) interrupts and fragments the area, altering the transition between open grassland and wooded areas.
- The report mentions advice from the NPWS in the pre-application scoping consultation response (19/04/2021) on prioritising avoidance and mitigation by design in line with the National Biodiversity Action Plan. However, the fauna surveys show significant species diversity in the Ballymoloney wood area, particularly for mammals and bats. Much of the survey work was conducted in 2021, with preliminary indications of turbine layout, potentially leading to an incursion into the Ballymoloney wood area.
- Concerns are raised about the disturbance of badger setts in the Ballymoloney Wood area and its potential impact on surrounding agricultural pasture lands.

3.3.2.11. ***Bats:***

- The report discusses bat activity within the site and the Bat survey notes that Leisler's bat, soprano pipistrelle, and common pipistrelle are the most abundant bat species. The wooded area on the site is important for these species as potential roosting sites.

- The removal of linear features that link the woodland to the rest of the site is expected to impact the foraging grounds for these bat species. The report also mentions the potential impact of turbines, including barotrauma, on bats.
- The report indicates that mitigation measures like feathering and blanket curtailment are proposed but suggests that the location of turbines, particularly west, south, and east of the existing tree line, is inconsistent with the principle of mitigation by avoidance.
- Without mitigation measures, the report states that there will be a long-term significant adverse regional impact on common pipistrelle and soprano pipistrelle populations, a long-term significant adverse impact on Leisler's bat at the county to regional level, and a long-term significant adverse effect on Nathusius' pipistrelle at the county level. The proposed mitigation measures are expected to provide a 50% reduction in fatalities.

3.3.2.12. ***Replacement Planting:***

- The report refers to replacement tree and hedge planting data in Appendix 1 of the Biodiversity Enhancement Management Plan (BEMP) but suggests that this mapped data and inventory should be included in the main text of the EIAR (Chapter 8) to provide a coherent description of these proposed mitigation measures.

3.3.2.13. ***Avifauna:***

- The report discusses the impact on target avifauna species and notes concerns raised about the presence of Hen Harrier in the area. Survey data did not indicate significant presence of Hen Harrier at the site, and the report suggests that there is a narrow availability of open foraging habitat capable of supporting a pair of breeding Hen Harrier.
- Concerns are raised about the impact on Kestrel, Sparrowhawk, Marsh Fritillary, and other species. The EIAR describes the risk to several species but concludes that the risk is very low based on presence, flight height, and other factors.

3.3.2.14. ***Inclusion of Mitigation Measures in Strategic Assessment:***

- Mitigation measures proposed for bat protection and shadow flicker should be included in the overall strategic consideration of site suitability, particularly in terms of the operational output of the wind farm.

3.3.2.15. ***Peat Deposits on Site:***

- The report notes that no significant peat deposits have been identified at turbine locations, and reasonable soil/subsoil depths are noted.
- Slopes at turbine locations on the site range from 4 to 120 degrees, with T3 being defined as having the maximum slope. It clarifies that this T3 corresponds to the description provided in Appendix 9 to the EIAR rather than T3 as defined in the submitted drawings.
- The findings from intrusive site investigations, including trial pit photographs, support the desk study findings. These investigations indicate the presence of tills derived from Devonian sandstone and shales.
- Turbines T1 and T2 were selected for slope stability testing, and a safety ratio was derived for these sites, with both sites considered stable in long-term drained conditions.
- There is no reference to the height of the turbines in the assessment of foundation and stability. The report recommends confirming the numbering of the turbines indicated in the geotechnical assessment to ensure consistency with the EIAR. Additionally, it suggests cross-checking the scope of the stability survey in the context of foundation depth and stability in relation to the turbine height.

3.3.2.16. ***Invasive Species:***

- The report highlights that survey work has identified the presence of invasive species, specifically Japanese knotweed, Himalayan knotweed, and Giant hogweed, in various locations associated with the turbine site and the grid connection route.
- It notes that Japanese knotweed is identified within 54 meters and 50 meters (from T6) of site infrastructure within the wind farm site. The EIAR indicates that there will be no interference with these areas.

- The report raises concerns that given the extent of tree felling, groundworks, machinery movement, infilling, and HGV movement, the separation distances of 50 meters and 54 meters may not be adequate to prevent the spread of invasive species. It suggests that the Invasive Species Management Plan needs to address the management of these affected areas.
- The mitigation measures outlined in Appendix 3-2 indicate the provision of a 5-meter buffer around identified areas of invasive species. The report contends that this buffer may not be sufficient to prevent the spread of invasive species, considering machinery movement, soil disturbance, and the potential for rhizome-based spreading.
- The report notes that options for the management of Giant hogweed on the grid connection route are indicated, but no preferred management strategy is defined. It suggests that a more structured approach should be taken to define how these areas will be managed, including eradication measures and disposal of materials, with specific identification of disposal locations.

3.3.2.17. ***Population and Human Health:***

- The chapter does not cross-reference the timing of construction works, associated traffic issues, the ongoing operation of the Bolton quarry to the south of the site, and potential other works likely to commence (Killaloe bye-pass and Carrownagowan wind farm) that are considered coincident with the grid connection works.
- The timing of works in the area should not only take into account ecological constraints but also consider agricultural activities, especially since the lands around the wind farm site are in agricultural use, and the local road is narrow and single-carriageway in some sections.
- The report concludes that based on the information provided in the NIS and Stage 1 Screening report, as well as the site description and supporting documentation, it is not possible to assess the development's likely impacts on the European sites network. The data presented in the application do not adequately describe mitigation measures, particularly site management during construction. In the absence of spoil management data; absence of co-ordinated approach to sizing of

stilling ponds and definition of their location relative to sensitive water bodies; absence of consideration of other developments likely to give rise to cumulative impacts on the receiving environment; absence of adequate definition of tree felling/hedgerow removal and replacement planting; and, absence of consideration of invasive species in the footprint of the work areas in the win, it is not possible to reach any conclusion regarding potential impact on the European sites network.

3.3.3. **Road Design Report**

- Clare County Council Development Plan 2017 to 2023 stipulates that a road safety audit must be submitted as part of any planning application involving a new access to a National Road or that may result in increased traffic on a National Road. These audits should be conducted independently by assessors approved by the Transport Infrastructure Ireland.
- A Traffic and Transport Assessment (TTA) is required for the development, as it falls within the sub-thresholds specified in PE-PDV-02045 Traffic and Transport Assessment Guidelines.
- The long-term damage impacts on the road infrastructure, which may be recoverable by the Local Authority, should be agreed upon with the Municipal District Engineer's Office. Additionally, the reinstatement of the carriageway upon completion of the Grid connect should be reviewed with the MD Engineer's Office.
- The development proposes two entrances off the R466 and L-7126. Both carriageways have an 80 km/h speed limit, and the standards outlined in DN-GEO-03060 'Geometric Design of Junctions' apply. Specific sightlines and sight stopping distances are required to meet these standards. During a site visit on 02/02/2023, it was found that the current alignment does not achieve the required standards. The proposal indicates widening the radii on the entrance and reducing hedging/vegetation to improve sightlines.
- The Road Design Office acknowledges the inclusion of the sweep path autotracking of the Turbine Delivery Route. It is noted that Points of Interest 1 to 33 represent the proposed Turbine Delivery Route, and no other route should be used. Points of interest 13 to 17 are missing from Volume 3 appendices Part 2 and should be submitted as part of Further Information.

- The applicant is advised to contact the Project Management Office (PMO) to ensure auto tracking has been conducted on the most up-to-date drawing of the Killaloe by-pass. The proposal should also consider the full works required to modify the roundabouts serving the by-pass, including property owners' boundaries modifications, boundary walls, and fences.
- A pre, during, and post road, bridges, and culverts condition survey should be completed by the applicant along the delivery and abnormal delivery paths once exact routes have been confirmed. This should be agreed in advance with the Municipal District Engineer's Office. All road surfaces, bridges, and culverts should be reinstated to pre-development conditions as agreed with the Municipal District Engineer's Office.
- The sweep paths provided state "Load Bearing Surface to be laid." The Road Design Office recommends that this load-bearing surface should be reviewed by the Municipal District Area Engineer.
- Any alterations to the roadway, junctions, roundabouts, grass verges, etc., should be agreed with the Municipal District Area Engineer.
- Any proposed works to junctions shall comply with TII publications and be subject to a road safety audit as appropriate. Works should ensure ongoing safety for all road users.
- The Road Design Office acknowledges the inclusion of emergency blue light services assistance for the duration of all major deliveries and any time road usage may be affected.
- Efforts should be made to notify all residents who may be impacted by construction activities or outages. This notification should include specifics regarding the number of proposed vehicles on the road, their timing, and locations.
- Any proposed modifications to the road network resulting from the swept path analysis, whether temporary or permanent, should be agreed in detail with the Municipal District and the Road Design Office before work begins.
- The traffic management plan should be agreed with the Municipal District and the Road Design Office for works related to the Grid Connection Routes.

- Upon completion of the construction of the development, concerns are raised regarding the two entrances on the Fahy More Local Road L-7126. It is unclear whether these entrances are proposed for the access road within the site for maintenance or if they are becoming gate entrances.
- The proposed development shall not interfere with any roadside drainage or cause any surface water flow out onto the public road, during construction or thereafter.
- A Construction Waste Management Plan shall be agreed with the Planning Authority prior to commencement of development.

3.3.4. **Clare County Council Fire Authority**

No objections subject to compliance with the Building Regulations 1997 (as amended).

3.4. **Submissions from Prescribed Bodies:**

3.4.1. **Irish Aviation Authority (dated 19 April 2023)**

- The IAA ANSD states that it does not participate in the planning process for developments.
- The developer shall notify the aerodrome operator 30 days before erecting structures near an aerodrome as per S.I. 215 of 2005.
- Any structure exceeding 45 meters above ground or water must be reported to the IAA ANSD 30 days prior to erection.
- The developer must fund the OSi survey for electronic terrain and obstacle data as required by the ICAO Annex 15.
- The developer must submit turbine data: WGS84 coordinates, height to blade tip above ground and sea level, project integration details, rotor diameter, blade length, and lighting specifications.

3.4.2. **HSE – Environmental Health Service**

The HSE – Environmental Health Service key issues and comments are as summarised below:

- Regarding Scoping of the EIAR - the Environmental Health Service (EHS) is satisfied that all likely significant effects on the environment, population and human health have been adequately considered in the EIA process. Public Consultation:
- The EHS's opinion is that public consultation was geographically limited, and good practice would include extending consultation to areas further away from the site that may be interconnected e.g., Bridgetown and O'Briensbridge.
- The EHS acknowledges that the public consultation process was impacted by COVID-19 restrictions but considers that it could have been extended post the lifting of these restrictions, due to the time before the application was submitted.
- The EHS recognises the well-documented health effects of exposure to dust, particularly fine particles below 2.5 PM in size. Given the anticipated 18-month construction timeline, it is stated that robust dust minimisation measures need to be implemented, especially during dry weather periods.
- The EHS notes the comparison of emissions against Air Quality Standards (AQS) and health protection standards during construction activities. It is in agreement with the assessment that the development site represents a typical Zone D site for background air quality. Baseline monitoring in Limerick City is suggested as it would provide additional health protection within the calculations of AQS.
- The EHS acknowledges the increase in traffic on connecting roads due to the development, resulting in increased polluting emissions. However, based on the information provided in the EIAR, there is no predicted level of emissions that would breach health protection standards.
- EHS deems dust control crucial in construction to safeguard health, noting the EPA's daily dust cap of 350 mg/m^2 and stressing the need for full mitigation and ongoing dialogue with locals, especially in dry conditions
- There are no significant emissions to air as a result of the operation of the proposed turbines.
- The EHS concludes that subject to the implementation of the mitigation measures in section 6.5.1.1 of the EIAR are implemented fully, there will be adequate

protection of population and human health during the construction phase regarding emissions to air and air quality.

- EHS highlights the need for careful construction management to protect food premises along the GCR from dust, maintain cold chains during service disruptions, and implement pest control if drains or water bodies are affected.
- EHS recognises concerns about construction traffic emissions near the Primary School on the R466 but considers them temporary and unlikely to exceed health standards during construction or operation.
- EHS acknowledges Section 10.1.4 of the EIAR on water impact but suggests identifying drinking water sources explicitly in this section.
- The EHS raises concern that it's unclear whether private drinking water sources have been adequately considered in the EIAR.
- The EHS recommends that, if permission is granted, it should be conditioned to state that there are no emissions of wastewater directly to surface or ground water. Foul wastewater from temporary welfare facilities should be contained and removed off-site for treatment at a licensed facility. Any water used at the temporary compound should be potable and meet the requirements of the European Union (Drinking Water) Regulations 2023.
- The EHS considers the construction noise and activities and recommends controlling exposure to construction noise through conditioned hours of activity if permission is granted.
- It raises concerns about the noise exposure levels presented in Table 7.1 of the EIAR, suggesting that they are not reasonable for protecting sleep and normal land use in a rural area.
- The EHS highlights the WHO’s identification of noise as a significant health risk, particularly when it disturbs sleep. It questions the acceptability of permitting noise levels of 55dB up to 11 pm at night (a change of 20dB) for Category A activities during an 18-month construction period. Similarly, permitting noise levels of 65 dB for Category A activities to commence at 7:00 am within an existing noise environment is considered unreasonable.

- The EHS notes that compliance with a license or planning condition does not negate the fact that an activity cannot create a statutory nuisance, as established by the Supreme Court.
- To protect public health, the EHS recommends limiting construction hours to the following: Monday to Friday (08:00-19:00), Saturday (09:00-14:00), no work on Sundays or Bank Holidays, with any exceptions requiring explicit Planning Authority approval.
- The EHS notes that the evaluation criteria for daytime noise exposure are taken from the 2006 Guidance, which permits an absolute noise exposure limit of 35 to 40 B LA90. However, there is no guidance on how to choose the noise limit within this range.
- The EIAR has chosen the higher criteria for noise exposure, citing the need to achieve a balance between power generation and noise impact. It refers to ETSU R-97 recommendations, including considering factors such as the number of dwellings near the wind farm, the effect of noise limits on kWh, and duration and level of exposure.
- The EHS raises several concerns about the rationale for using the higher noise exposure criteria.
- The "common good" identified in the EIAR to justify higher noise exposure for sensitive locations is questioned, as it has no basis in environmental impact assessment. The EIAR should assess likely significant effects without forming opinions on planning balances.
- The EIA should inform stakeholders, including local residents, of the significance of predicted noise against a lower health protection standard. The implications of using lower power output to meet noise requirements and other rationales should have been considered in the alternatives section of the EIA.
- The EHS recommends reporting noise levels at every criteria between 35 and 40 dB LA90, allowing the Planning Authority to decide on the balance between development needs, merits, and environmental impacts.
- It is noted that if the lower level from ETSU R-97 was adopted, none of the noise-sensitive locations would meet the criteria at higher wind speeds. Even at the

highest adopted criteria, some locations would still be exposed to higher noise levels than the adopted criteria to the southwest of the site.

- The EHS suggests that setting a higher noise limit because it's not viable to run the development at lower power should not be used to ignore the assessment of the lower noise limit's health protection standard.
- The EIAR does not report the predicted change in the noise environment but only compares the predicted noise against the absolute noise exposure criteria adopted at the highest level in the 2006 Guidance.
- The adoption of a higher noise limit at night (43 dB LAQ90) is contrary to the expected position that noise should be better protected at night. The EHS points out that the theoretical attenuation of noise at night, as detailed by ETSU R-97, doesn't necessarily occur, especially in rural areas like the proposed development site.
- The EHS is of the opinion that the EIAR does not adequately assess the likely significant effects from noise for several reasons, including the questionable rationale for adopting the higher noise exposure criteria (40 dB LAQ90), the lack of clear reporting on changes in the noise environment at noise-sensitive locations, and the need to inform the Planning Authority of the effects at both lower and higher noise level criteria to make informed decisions.
- The EHS notes that the 2006 Wind Energy Guidance document, which is used in the assessment of shadow flicker, is generally considered outdated and unsuitable for assessing the impact of current turbine heights and their proximity to housing and facilities.
- The EHS notes the draft Wind Energy Development Guidance 2019. Section 5.8 of the draft guidance states that planning authorities or An Bord Pleanála should impose conditions to ensure that no existing dwelling or affected property will experience shadow flicker. The wind energy development should be installed and operated in accordance with the submitted shadow flicker study, including any required mitigation measures.

- The EIAR section 12.2.1.4 states that until the 2019 Draft guidelines are finalised and published, the currently adopted Wind Energy Development 2006 guidelines will continue to be considered for shadow flicker assessment.
- The EHS expresses several concerns regarding the continued use of the 2006 guidance.
- The wind energy development landscape has changed significantly since the 2006 guidance was drafted, and it is no longer considered suitable for assessing the impacts of modern wind turbines.
- There has been significant progress in technology related to identifying and mitigating shadow flicker events, as well as an increased understanding of the health effects of shadow flicker exposure.
- The draft 2019 guidance, which prescribes the conditioning of zero shadow flicker by planning authorities, reflects the consensus that zero-shadow flicker should be a standard requirement for future wind energy development.
- The EIAR indicates there will be mitigation to ensure zero shadow flicker exposure, which is considered a health protection standard that technology can implement at a reasonable cost and has become standard for other wind energy developments.
- The EHS recommends that if consent is granted for the proposed development, it should be conditioned as per section 5.8 of the Draft Guidance mentioned above. This is recommended in the interest of protecting population health and ensuring that zero shadow flicker is achieved as a standard requirement for wind energy developments.
- The EHS is of the opinion that there is adequate protection of public and environmental health during the construction phase as long as the mitigation and controls specified in the plan are fully implemented.
- It is recommended that there be a dedicated person responsible for dealing with complaints and liaising with members of the public regarding any issues related to the construction phase.
- The effectiveness of environmental controls should be continuously monitored and reviewed during the construction phase to ensure their ongoing effectiveness.

- The EHS reiterates its opinion that technology justifies the imposition of a zero shadow flicker planning condition if permission is granted.
- The EHS reiterates that, if mitigation measures are fully implemented, there is adequate protection of public and environmental health with regard to emissions to air during both the construction and operational phases.
- The EHS is of the opinion that proposed mitigation, if fully implemented, provides adequate protection to ground and surface water during both the construction and operation phases.
- The EHS concurs with third-party submissions that there is not adequate assessment of the likely significant effects from noise in the EIAR.

3.4.3. **Inland Fisheries Ireland**

Inland Fisheries Ireland (IFI) comments are as follows:

- IFI specifies that any works that may affect the instream and riparian riverine habitat should be carried out between July 1st and September 30th.
- IFI requires at least one week's advance notice before the commencement of felling operations on the site.
- IFI requires consultation and approval in relation to the culvert and clear-span bridge crossing, including consultation on the final contractor method statements for the works.
- It is recommended that site water quality monitoring continues during the initial operational phase of the wind farm to confirm that there are no adverse changes or impacts on receiving water quality.
- Where temporary stream diversions are necessary, they should be lined to prevent erosion and the loss of silt downstream.
- Culverts should be back-filled with gravel material to simulate natural channel conditions, and pipe culverts should be installed 300mm below bed-level at the natural channel gradient.

- In cases where box culverts may be too wide for the existing stream width, measures should be taken to ensure fish passage, such as providing a low-flow channel or baffles.

3.4.4. During the construction phase, IFI recommends the following:

- Cleaning of plant, machinery, and personal protective equipment (PPE) should occur regardless of where these items were last used to prevent the spread of invasive species.
- IFI should be consulted regarding the final contractor Construction Environmental Management Plan (CEMP).
- There should be no permitted discharges to surface water resources of contaminated water or surface water run-off from the development.
- Servicing and refueling of plant and equipment should only take place on impermeable hard standing areas.
- All plant and equipment used on the site should carry spill clean-up kits and should not be used or operated if there is evidence of leakage or damaged oil seals. Oils and fuels should be stored in secure bunded areas.
- Concrete delivery vehicles should not wash out at locations that could result in a discharge to surface or foul sewers. Storage of cement or lime on site should be in a dry and secure area.
- When temporary diesel or petrol-driven pumps are used within the site, they should be positioned within portable bunded units.

3.4.5. **Fáilte Ireland**

Fáilte Ireland's comments are as follows:

- Fáilte Ireland acknowledges the need for sustainable development, including renewable energy projects, provided they are located appropriately.
- The River Shannon and its associated rivers and lakes are highlighted as a major tourism attraction, offering opportunities for cruising, boating, and onshore activities. Visitors are drawn to the area to enjoy these amenities.

- The region is praised for its unspoiled and picturesque scenery, which contributes to its popularity among tourists. The natural beauty of the area is considered a valuable asset.
- The landscape surrounding Lough Derg provides a variety of recreational trails for visitors, including options for walking, cycling, and horse-riding.
- The area is noted for its rich cultural heritage, with settlements dating back to prehistoric times. There are over 90 accessible historical sites around Lough Derg.
- The Lough Derg Visitor Experience Development Plan for the period 2020-2024 outlines a vision for tourism development in the area. This plan aims to coordinate priorities and initiatives to enhance the tourism economy around Lough Derg.
- The development plan is designed to align with Failte Ireland's Hidden Heartlands brand, showcasing the unique and lesser-known treasures of Ireland to tourists.
- In partnership with Fáilte Ireland and local authorities, Waterways Ireland is leading the preparation of the Shannon Masterplan. The primary objective of this masterplan is to revitalize the Shannon Navigation and Shannon Erne Waterway as a key destination within Ireland's Hidden Heartlands.
- Concerns are raised about potential impacts on the biodiversity and ecology of the area during the construction of major infrastructure elements and the installation of the wind turbines.
- At the operational stage of the wind farm, key impacts that could affect tourism in the receiving environment are highlighted. These impacts primarily relate to visual impacts and those associated with the operation of the facility.
- Reference is made to the Landscape Character Assessment of County Clare from 2004, which describes various Landscape Types (LCTs) and Landscape Character Areas (LCAs). The proposed wind farm is located within LCA 8, Slieve Bernagh Uplands.
- The unique landscape characteristics of LCA 8 are noted, including the prominence of Slieve Bernagh, remote upper slopes, and extensive views across the surrounding landscape.

- The sensitivity of the higher slopes to visible development is highlighted, along with designated high amenity areas like the skylines of Slieve Bernash and Woodcock Hill to Ballycar.
- The potential visual impacts of the proposed development on the landscape character and the amenity value are emphasised.
- The proximity of the East Clare Way, a long-distance route (172km) passing within 2 km of the proposed development, is noted.
- The protection and management of landscape character are emphasised not only for the physical context but also as an economic and cultural asset, considering the role of recreational activities in the area.
- The proposed wind farm is situated within an area designated as 'Open for Consideration' in the Clare Renewable Energy Strategy for the period 2017-2023.

3.4.6. **Development Applications Unit, Department of Housing, Local Government and Heritage**

3.4.7. The Development Applications Units (DAU) comments are as follows:

- The Natura Impact Statement (NIS) report mentions mitigation measures prescribed to avoid or reduce potential adverse effects on the Lower River Shannon SAC (Special Area of Conservation) and Dane's Hole, Poulnalecka SAC. However, the potential impacts should be characterised, and the proposed mitigation measures should clearly state how they will mitigate the identified adverse effects. General terms like "Habitats and Flora" should not be used as mitigation measures without specifying their applicability to the identified impacts.
- The Construction Environmental Management Plan **(**CEMP) mentions that it will be updated before construction to account for any relevant planning permission conditions and will be implemented throughout the construction phase. It is essential that there are no ambiguities regarding the requirements for mitigation. All nature conservation mitigation measures should be clearly outlined in the CEMP.
- The CEMP should provide a clear and concise outline of all nature conservation mitigation measures.

- The DAU notes that the mitigation measures for mammals involve ecologist supervision during vegetation, scrub, and hedgerow removal before and during construction. However, it suggests that this should be clarified, especially in cases where vegetation is too dense to assess beforehand. Additionally, the presence of otters is not specifically mentioned in this context.
- The DAU recommends making it clear that mitigation for breeding mammals (including Squirrel and Pine Marten) and breeding birds involves restricting vegetation clearance to the months of September to December.
- The DAU points out that Section 8.6.3.1 of the EIAR refers to mitigation measures for the operational phase for 'designated nature conservation sites' and 'Habitats and Flora,' but section 8.6.3.6 does not outline any such mitigation measures. It suggests addressing this inconsistency.
- The DAU recommends ensuring clarity on the roles and responsibilities of various parties involved, including the applicant, environmental manager, Ecological Clerk of Works (ECoW), and the contractor in implementing mitigation measures.
- The DAU advises that the ECoW should oversee and report on mitigation measures, including progress signoffs, instances of failure, and remediation actions.
- The DAU notes that it does not have access to the confidential badger mitigation report submitted with the application, and therefore, it has not been assessed.
- Regarding Hen Harrier, the NIS notes low site usage unrelated to SPAs, but the DAU questions the negligible onsite habitat usage and points out potential impacts from evolving forestry operations.
- The DAU raises concerns about the absence of a comprehensive decommissioning plan accompanying the application. It notes that the Construction Environmental Management Plan (CEMP) suggests that mitigation measures for decommissioning would be similar to those for the construction phase.
- The DAU finds that there is inadequate and insufficient information in the EIAR and NIS to support the conclusion that decommissioning works will not have an adverse effect on the environment. It suggests that decommissioning activities should be

scrutinised and assessed in a similar manner to the commissioning and operational phases.

- The Department highlights the importance of ensuring clarity and transparency in the CEMP regarding the requirements for mitigation measures, including decommissioning. It emphasises that the CEMP should be a live document and be updated to account for any relevant conditions attached to planning permission. There can be no doubts or lacunae regarding what is required for mitigation.
- The DAU broadly concurs with the findings of the EIAR regarding the assessment of impacts on archaeology, architectural, and cultural heritage.
- The DAU recommends that all proposed mitigation measures related to archaeology, architectural, and cultural heritage be fully implemented.
- The developer should provide a final archaeological report detailing site investigations and analyses to both the Planning Authority and the Department, with all related costs covered by the developer.
- The CEMP should include the location of all archaeological or cultural heritage constraints relevant to the proposed development, as outlined in Chapter 14 of the EIAR, and potential impacts and mitigation measures for site preparation and construction phases.

4.0 Planning History

4.1. Subject Site

P.A. Ref. 17/552 Permission granted in April 2018 to Roadstone Ltd. for development consisting of the importation of inert excavation spoil comprising natural materials of clay, silt, sand, gravel or stone for the purpose of restoration of a previously extracted area (1.08ha) within Ballyquin Pit. The application was accompanied by an Environmental Impact Assessment Report (EIAR).

Substitute Consent Planning Authority Ref: EUQY93 and ABP Ref. 03.SU.0040 Substitute Consent granted by An Bord Pleanála on 24/02/2015 to Roadstone Ltd. for Sand and Gravel Extraction at Ballyquin Pit, O'Briensbridge. Co. Clare. The application was accompanied by a remedial EIAR.

4.2. Other windfarm development in the greater surrounding area

ABP Ref. 308799-20 10-year Permission granted in 2022 for 19 no. wind turbines, one meteorological mast, 110kV substation and all associated site development works at the townlands of Ballydonaghan, Caherhurley, Coumnagun, Carrownagowan, Inchalughoge, Killokennedy, Kilbane, Coolready and Drummod, located c. 5.5km to the northwest of the subject site.

ABP Ref. PL22.243040 10 year Permission granted in 2014 for 22 wind turbines, 2 no. meteorological masts with wind measuring equipment attached, access roads, electrical substation compound, control buildings and ancillary works at Graniera Shevry, Knockcurraghbola Upperchurch, Co. Tipperary.

5.0 Policy and Context

5.1. Development Plan

Clare County Council Development Plan 2023-2029 is the statutory plan for the area. The following Development Plan policy and provisions are considered relevant:

Chapter 2 Climate Action

Table 2.2 Renewable Energy Resource Targets for County Clare to 2030

CDP2.1 Climate Action

CDP2.2 Climate Change Mitigation, Adaptation and Resilience

CDP2.14 Transition to a Low Carbon Economy and Society

CDP2.22 Ardnacrusha Hydroelectric Power Station

Chapter 3 Core Strategy

CDP3.3 Appropriate Assessment, Strategic Environmental Assessment and Strategic Flood Risk Assessment

Chapter 4 Urban and Rural Spatial Strategy

Map 4B Areas of Special Control

Chapter 6 Economic Development and Enterprise

CDP6.17 Energy Supply

CDP6.18 Green Technology

Chapter 8 Rural Development and Natural Resources

CDP8.12 Renewable Energy Development

Chapter 9 Tourism

Map 9A Tourism Corridors

Chapter 11 Physical Infrastructure, Environment and Energy

CDP11.40 Noise Pollution

CDP11.41 Air Quality

CDP11.42 Light Pollution

CDP11.44 Energy Security

CDP11.45 Electricity Networks

CDP11.47 Renewable Energy

CDP11.48 Renewable Energy Strategy

Chapter 14 Landscape

Figure 14.1 Map of Landscape Character Types

Figure 14.2 Map of Landscape Character Areas

CDP14.2 Settled Landscapes

CDP14.7 Scenic Routes

Map 14A Landscape Designations

Chapter 15 Biodiversity, Natural Heritage and Green Infrastructure

CDP15.1 Biodiversity

CDP15.2 Natural Heritage, Biodiversity and Built Heritage Assets

CDP15.3 European Sites

CDP15.4 Requirement for Appropriate Assessment

CDP15.5 Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas

CDP15.8 Non-Designated Sites and Biodiversity

CDP 15.9 Natural Heritage and Infrastructure Schemes

CDP15.10 Environmental Impact Assessment

CDP15.12 Biodiversity and Habitat Protection

CDP15.14 Habitat Fragmentation and Green Infrastructure Corridors

CDP15.19 Woodlands, Trees and Hedgerows

CDP15.20 Natural Resources & Climate Change

CDP15.29 Alien and Invasive Species

CDP15.30 Green Infrastructure and Climate Change

Chapter 16 Architectural, Archaeological and Cultural Heritage

CDP16.1 Architectural Heritage

CDP16.2 Protected Structures

CDP16.5 Architectural Conservation Areas (ACAs)

CDP16.6 Proposed Works to Buildings - Protected Species and Environmental Considerations

Chapter 18 Design and Placemaking

18.4.1 Energy Efficiency and Sustainability

Chapter 19 Land Use and Zonings

19.3 Land Use Zoning

19.5 Indicative Land-Use Zoning Matrix

19.5.1 ‘Permitted in Principle’

19.5.2 ‘Open for Consideration’

19.5.3 ‘Not Normally Permitted’

19.5.4 Uses Not Listed in the Indicative Zoning Matrix

Appendices:

Appendix 1 - Development Management Guidelines

A1.2 Climate Action and Energy

A1.2.3 Renewable Energy

A1.3 Natural Heritage, Biodiversity and Green Infrastructure

A1.3.1 Environmental Impact Assessment (EIA)

A1.3.2 Habitat Directive Assessment

A1.6 Transport and Movement

A1.6.1 Cycle Routes, Footpaths and Roads

A1.6.2 Sight Distances

A1.6.4 Traffic Impact Assessments (TIA), Road Safety Audits and Road Safety Impact Assessments

A1.10.1 Development Contributions A1.10.2 Cash Deposits and Bonds

Appendix 2 - Indicative Land Use Zoning Matrix

Appendix 3 - Natural Heritage Sites in County Clare:

- Table A3.1 Special Areas of Conservation (SACs) in County Clare
- Table A3.2 Special Protection Areas (SPAs) in County Clare
- Table A3.3 Natural Heritage Areas (NHAs) in County Clare

Appendix 5 - Scenic Routes

Appendix 6 - Public Rights of Way and Recreational Routes

Appendix 7 - Plans, Policies and Guidelines to which the Development Plan must have regard

Vol. 6 - Clare Wind Energy Strategy 2023-2030 (Interim Version, April 2023)

Clare Climate Change Adaptation Strategy 2019-2024

Landscape Character Assessment of County Clare 2004

5.2. Other Relevant Government Policy / Guidelines

5.2.1. National Context

National Planning Framework – Project Ireland 2040

National Development Plan 2018-2027

Climate Action Plan 2023 (Climate Action Plan 2024 subject to AA, SEA and public consultation)

National Policy Position on Climate Action and Low Carbon Development (2014)

Ireland's Transition to a Low Carbon Energy Future 2015-2030

National Climate Change Adaptation Framework (2018) (NCCAF)

Programme for Government – 'Our Shared Future' (2020)

Climate Action and Low Carbon Development (Amendment) Act (2021)

Climate Action Charter for Local Authorities (2019)

Climate Change Sectoral Adaptation Plan (2020)

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

National Renewable Energy Action Plan (NREAP)

Wind Energy Development Guidelines for Planning Authorities 2006 and Draft Guidelines 2019

Circular PL 20-13 - Review of Wind Energy and Renewable Energy Policies in Development Plans

Southern Regional Spatial and Economic Strategy

Design Manual for Urban Roads and Streets (2019).

Traffic Management Guidelines, Department of Transport (2019).

Traffic and Transport Assessment Guidelines (2014)

TII standard DN-GEO-03060 'Geometric Design of Junctions'

Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government, (2009)

OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021).

Architectural Heritage Protection – Guidelines for Planning Authorities (2011)

The Planning System and Flood Risk Management, Guidelines for Planning Authorities Guidelines (including the associated Technical Appendices) (2009)

National Biodiversity Action Plan 2023-2027

Tree Preservation Guidelines DOELG (1994)

Ireland's Invasive Alien Species Soil and Stone Pathway Action Plan 2023-2027

BS 5228-1:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites – Noise (2009)

Best Practice Guidelines for the Irish Wind Energy Industry (2012), published by the Irish Wind Energy Association.

Environmental Noise Guidance for Local Authority Planning & Enforcement Departments (2021), published by Association of Acoustic Consultants of Ireland.

5.2.2. <u>European Context</u>

S.I. No. 77/2019 - European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019

Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe.

Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment *(SEA Directive).*

Ireland's National Energy and Climate Plan 2021-2030

EU Adaptation Strategy 2021

EU Climate and Energy Framework 2021 to 2030

EU Green Deal (2020)

EU Adaptation Strategy 2013

5.3. Natural Heritage Designations

5.3.1. There are no European sites geographically overlapping with the Site, grid connection route and Biodiversity Enhancement Areas.

5.3.2. The Turbine Delivery Route will be along existing roads which traverse or abut the following European sites:

- Lower River Shannon SAC (Site Code: 002165);
- Barrigone SAC (Site Code: 000432);
- Curraghchase Woods SAC (Site Code: 000174);
- Askeaton Fen Complex SAC (Site Code: 002279);
- River Shannon and River Fergus Estuaries SPA (Site Code: 004077).

5.3.3. Natura 2000 European Sites within 15km of the site are as follows:

- Slieve Bernagh Bog SAC (Site Code: 002312) - 2.3 km to the closest turbine, 4.1 km to grid connection, 5.1 km to the closest TDR Node (Node 32), 2.2 km to the closest BEMP area.
- Glenomra Wood SAC (Site Code: 001013) – 3.2 km to the closest turbine, 0.6 km to grid connection, 2.9 km to the closest TDR Node (Node 32), 1.5 km to the closest BEMP area

- Lower River Shannon SAC (Site Code: 002165) - 2.9 km to closest turbine, 1.6 km to grid connection, 0 km to closest TDR Node (Node 20), 3.9 km to closest BEMP area.
- Lough Derg (Shannon) SPA (Site Code: 004058) - 6.1 km to the closest turbine, 8.8 km to grid connection, 2.2 km to the closest TDR Node (Node 19), 6.5 km to the closest BEMP area.
- Danes Hole, Poulnalecka SAC (Site Code: 000030) - 9.2 km to the closest turbine, 9.2 km to grid connection, 11.2 km to closest TDR Node (Node 32), 8.5 km to closest BEMP area.
- Slievefelim to Slivermines Mountains SPA (Site Code: 004165) - 11.5 km to closest turbine, 12.2 km to grid connection, 3.9 km to closest TDR Node (Node 11), 12.2 km to closest BEMP area.
- Clare Glen SAC (Site Code: 000930) - 13.2 km to the closest turbine, 13.0 km to the grid connection, 7.4 km to the closest TDR Node (Node 11) and 13.9 km to the closest BEMP area.
- River Shannon and River Fergus Estuaries SPA (Site Code: 004077) - 14.3 km to the closest turbine, 4.9 km to grid connection, 0.36 km to the closest TDR Node (Node 9), 13.3 km to the closest BEMP area.
- Kilkishen House SAC (Site Code: 002319) - 14.4 km to closest turbine, 12.7 km to grid connection, 16.3 km to closest TDR Node (Node 32), 13.8 km to closest BEMP area.
- Silvermines Mountains West SAC (Site Code: 002258) - 14.4 km to the closest turbine, 16.1 km to grid connection, 6.9 km to the closest TDR Node (Node 11), 15.0 km to the closest BEMP area.
- Slieve Aughty Mountains SPA (Site Code: 004168) - 15.8 km to the closest turbine, 14.8 km to grid connection, 6.9 km to the closest TDR Node (Node 19), 15.5 km to the closest BEMP area.
- Curraghchase Woods SAC (Site Code: 000174) - 28.8 km to closest turbine, 20 km to grid connection, 100 m to closest TDR Node (Node 6), 27.3 km to closest BEMP area.

- Askeaton Fen Complex SAC (Site Code: 002279) - 26.6 km to closest turbine, 17.8 km to grid connection, 7.4 km to closest TDR Node (Node 8), 36.2 km to closest BEMP area.
- Barrigone SAC (Site Code: 000432) - 38.2 km to the closest turbine, 30.2 km to grid connection, 3.1 km to the closest TDR Node (Node 3), and 36.2 km to the closest BEMP area.

5.4. EIA Screening

5.4.1. Schedule 5 of the Planning and Development Regulations, 2001 (as amended) transposes Annex I and II of the EIA Directive and sets out prescribed classes of development, for which an environmental impact assessment is required. The following class of development is noted under Part 2 (3)(i) of 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'.

5.4.2. The proposed development comprises the construction of 8 no. wind turbines and the stated Export Capacity (MEC) of the proposed development is expected to be between 31.2 – 38.4 MW. On this basis, the proposed development exceeds the limits set out in Part 2 (3)(i) of Schedule 5 of the Planning and Development Regulations 2001 (as amended) and therefore shall be subject to environmental impact assessment and an environmental impact assessment report is required. The application is accompanied by an Environmental Impact Assessment Report (EIAR) which was prepared by Fehily Timoney consultants on behalf of the applicant. The environmental impact assessment of the proposed development is set out under Section 9.0 below.

6.0 The Appeal

6.1. Grounds of Appeal

A first-party appeal was received from Fehily Timoney Consultants in Engineering, Environmental Science and Planning representing the Applicant RWE Renewables Ireland Ltd, against the decision made by the Planning Authority to refuse permission for the proposed development. The grounds of appeal are summarised under the headings below;

6.1.1. **Re. Refusal Reason No. 1**

- Refusal based on the project's location in an 'Open for Consideration' area for wind farms as per Clare County Council's 'Renewable Energy Designations' map.
- 'Open for Consideration' designation could imply suitability for wind farm development.
- The project's design is of a modest scale and extent, with turbines that are average in height by contemporary standards, typically between 180m - 200m.
- Complies with upcoming residential setback distance standards from draft revised Wind Energy Development Guidelines.
- The design complies with setback distance standards related to residential properties, as taken from the draft revised Wind Energy Design Guidelines.
- The objection to the use of "open and exposed upland landscape" as a reason for refusing wind farm development is inconsistent with the Irelands wind energy history.
- Upland landscapes have been key for Irish wind energy development for 30 years due to practical reasons.
- Wind turbines need open, elevated sites for efficiency, leading to their presence in these landscapes.
- Finding suitable wind farm locations in lowland plains is difficult in Ireland due to dense rural population and agricultural dominance.
- Landscape archetype includes mountain moorland, marginal farmland, and forestry, suitable for wind energy development.
- Transitional zones like Fahy Beg incorporate wind energy without losing human-influenced character.
- Claims that visible wind turbines harm visual amenity oversimplify the LVIA process.
- LVIA assesses if a wind farm is out of scale or place in its environment.
- Fahy Beg Wind Farm's LVIA found mid to low range negative impacts, no substantial adverse effects.

- Wind turbines aren't generally seen as unsightly and have symbolic significance.
- The proposed Fahy Beg Wind Farm, while highly visible from the R466 scenic route, is not considered visually dominant and has minimal visual impacts according to its Landscape and Visual Impact Assessment (LVIA).
- Nationwide, there are examples such as County Cork's scenic route S26 where turbines are visible without significantly impacting the scenic value.
- The key values of scenic routes range from the sense of wild remoteness to expansive views over rural landscapes, important for visual amenity assessments.
- For the Wind Farm, four viewpoints along the R466 were specifically chosen to assess visual impacts, offering a contextual rather than a mere visibility-focused evaluation.
- The R466 route provides views of varied landscapes, with the relevant part for the proposed wind farm acting as a transition between agricultural lowlands and mountainous moorland.
- The most clear view, VP4, shows a diverse landscape where the turbines appear contextually appropriate, aligning with design guidelines in the WEDG for this landscape type.
- The LVIA assessment for VP4 suggests that the turbines' visibility, fitting well with the landscape, results in a medium-low visual impact.
- Contrasting with the Clare County Council Planner's Report, the project LVIA distinguishes between mere visibility and visual dominance, finding the latter not applicable for the proposed development.
- The LVIA's summary of impacts on the R466 scenic route from various viewpoints indicates that the turbines fit the landscape context without significant visual disturbance.
- The LVIA rates the visual impact as 'Moderate-slight' for viewpoints VP2, VP4, and VP9, with VP8 in Bridgetown having lesser contextual significance.
- Objective 14.2 'Settled Landscape' of the Clare County Development Plan primarily addresses housing and building design, implying limited relevance to wind energy developments.

- Objective 14.7 'Scenic Routes' does not explicitly state wind energy developments as unsuitable for scenic views.
- The LVIA concludes that the proposed development on views from the public road towards scenic features has no significant adverse effects.

6.1.2. **Re. Refusal Reason No. 2**

- The proposed development adheres to appropriate setback distances as per the Draft Revised Wind Energy Development Guidelines (2019).
- Setback distances for visual amenity, as stated in SPPR2, are the greater of 500 meters or 4 times the turbine tip height from residential property boundaries.
- An Bord Pleanála and planning authorities must ensure these setback distances are met, with a minimum of 500 meters.
- Planning authorities have discretion on separation distances for smaller wind energy projects intended for onsite power generation.
- EIAR Chapter 3, Section 3.3.3, notes 26 residences are within 1km of the proposed turbines.
- The layout ensures a minimum of 720m between turbines and the nearest house, surpassing both 2006 and 2019 guideline requirements.
- One property owner within the range has agreed to a reduced setback distance for their property, closer to the turbines.
- Refer to Section 7.6 of the EIAR for comprehensive noise and vibration mitigation measures for residences near the proposed project.
- Predicted noise levels during construction are within BS 5228-1:2009+A1:2014 limits; additional measures will further minimize disturbance.
- Construction traffic noise to be mitigated by restricting vehicle movements to standard working hours; exceptions for critical activities may extend hours.
- Nighttime turbine deliveries will involve precautions to prevent vehicle idling near residences and will be communicated to residents in advance.
- The construction process will include community engagement and consultations, with a Community Liaison Officer updating residents on activities.

- Construction will follow noise control measures outlined in BS 5228:2009+A1:2014 and the CEMP's Section 4.3.2, detailed in EIAR Appendix 3.1.
- Regular maintenance of construction equipment will ensure minimisation of noise, with all machinery fitted with effective silencers and kept in good condition.
- Intermittently used machines will be shut down or run at minimum levels when not in active use.
- Construction activities will generally avoid unsociable hours, adhering to 07:00 - 19:00 on weekdays and 07:00 - 13:00 on Saturdays, with exceptions for fair weather or critical phases.
- Noise during construction and decommissioning will remain below the 65 dB LAeq,1hr limit for extended operations, indicating a non-significant noise impact.
- Grid connection works may temporarily elevate noise levels but will typically last less than three days per location, with noise barriers/screens and operational limits in place to keep within noise limits.
- The projected noise levels from the proposed wind farm meet both daytime and night-time noise criteria at the closest receptors, negating the need for noise mitigation measures.
- Receptors further from neighboring wind farms will encounter noise from a new source, with a slight to moderate predicted impact on dwellings within the 35 dB LA90 study area, and a moderate impact on residences closest to the wind farm.
- Post-construction, an operational noise survey will be conducted to ensure the wind farm's noise output adheres to established limits.
- Should operational noise exceed limits, mitigation will involve employing noise-reduced operational modes for the turbines, which may reduce electrical output but will control noise levels.
- The noise assessment for the proposed substation, detailed in Chapter 9 of the EIAR, anticipates combined ambient and transformer noise levels of 35 Laeq,15 mins at the closest sensitive location.

- The expected noise from the substation is 5 dB lower than the thresholds in the WHO Night Noise Guidelines for Europe 2009, suggesting no adverse health effects from night-time operations.
- Noise from construction traffic will be managed by limiting access route movements to standard working hours and prohibiting Sunday work unless approved by the local authority.
- Decommissioning activities, expected to have less impact than construction, will be confined to standard working hours: 07:00 - 19:00 on weekdays and 07:00 - 13:00 on Saturdays.
- Clare County Council's Roads Design Office Report seeks clarification on impacts, road layouts, drainage, waste, and recommends construction surveys.
- Chapter 13 of the EIAR forecasts increased traffic during construction, with a construction period of 12 - 18 months anticipated.
- An accelerated 12-month construction schedule estimates up to 114 HGV trips daily, peaking at 186 during the most intense construction phase.
- The average daily increase is projected at 150 HGV and LGV trips, surging to 230 in peak months, still within the rural road link capacity for 2025.
- HGV traffic will be routed onto regional roads, significantly reducing HGV traffic on local roads to the site's south and west.
- The R466 regional road is considered capable of handling the expected HGV traffic from the project.
- Construction traffic figures in Section 13.6 of the EIAR may overestimate actual traffic as they encompass the entire project, including separate wind farm and grid connection works.
- Traffic associated with grid connection, spanning 10.4 km of public road, is expected to be lower.
- EIAR chapters 13 and 9 state that excavated site material will be reused on-site, though traffic estimates assume all materials are imported for worst-case scenarios.

- A cumulative impact assessment in Section 13.9 of the EIAR analysed the combined effects with the nearby 19-turbine Carrownagowan wind farm.
- The Carrownagowan project is expected to produce a maximum of 330 HGV trips per day, which exceeds Fahy Beg's projections and shares part of the route with Fahy Beg project.
- The assessment found that any adverse effects from concurrent activities would be short-term and moderate, with mitigation measures planned to manage traffic disruption.
- The Clare County Development Plan 2023 - 2029 requires a road safety audit where a development will cause an increase in traffic to a National Road.
- The project will not result in traffic increase on national roads, making a road safety audit inappropriate.
- The turbine delivery route uses the M7 motorway, which will experience a minimal temporary increase in traffic during the construction phase, less than 1% temporary average daily increase in AADT.
- The proposed haul routes and grid connection route won't use the national road network.
- As stated in Section 13.8 of the EIAR, the trip generation post-project operation is anticipated to be minimal, with effects considered neutral, long-term, and imperceptible.
- The Roads Design Office requested a Traffic and Transport Assessment (TTA) due to the development falling within sub-thresholds detailed in PE-PDV-02045 Traffic and Transport Assessment Guidelines.
- Chapter 13 of the EIAR contains a detailed Traffic and Transport Assessment, with mitigation measures in Section 13.6 of the EIAR and a Traffic Management Plan (TMP) under Section 4.3.8 of the Construction Environmental Management Plan (CEMP).
- The EIAR mitigation measures to be implemented during construction address Clare County Council's concerns.

- Construction traffic management will be finalised according to the TMP after appointing the main construction works and turbine supply contract contractors.
- Some TMP items can only be finalised with input from the appointed contractor.
- The Project Supervisor Construction Stage (PSCS), when appointed, should actively participate in the TMP's preparation/review.
- The contractor will prepare the necessary Site-Specific Traffic Management Plans before construction commences, in accordance with Chapter 8 of the Traffic Signs Manual 2019 and subject to load permits.
- The contractor will handle all agreements between the developer, County Council, and local residents to minimise the project's transportation impact.
- The TMP will be reviewed by the PSCS, main contractor, any subcontractors and will be agreed upon with the Council before construction begins.
- The provided TMP will be a key construction contract document to reduce possible impacts during construction.
- If granted permission for the development, the final TMP will address all relevant planning conditions, including any conditioned mitigation measures.
- The Clare County Council Roads Department has expressed concerns about potential long-term road damage from the haul and grid connection routes used during construction, as noted in the EIAR.
- The EIAR includes commitments to restore or improve the condition of the local road network post-construction.
- Pre- and post-construction road condition surveys will be conducted, detailed in EIAR Section 13.7 and the Traffic Management Plan (CEMP Section 4.3.8), in coordination with the roads authority.
- The EIAR commits quick reinstatement of roads after construction to their original state or better, ensuring the roads authority's satisfaction.
- Mitigation measures in the EIAR and Traffic Management Plan for public road protection include pre- and post-construction road surveys, with joint surveys if requested by the Roads Authority, and the use of a road sweeper to maintain cleanliness during construction.

- The applicant specifies that the route from Points of Interest (POI) 1 to 33 is reserved for turbine delivery, involving blades, tower sections, nacelles, and hubs.
- The Killaloe Bypass, covering POI 13 to 17, will not have a swept path analysis as constraints are already known and street furniture will be cleared from the R494 regional road.
- Swept path assessments for the Killaloe Bypass will be updated post-construction using 'as built' drawings as per the EIAR Appendix 13-1.
- Coordination with the Killaloe Bypass Project Management Office was part of the EIAR process.
- Road modifications for turbine delivery will involve compacted aggregate to support heavy loads, detailed in the EIAR.
- Section 13.7 of the EIAR discusses communication protocols with the local road department to mitigate construction impacts on residents.
- Mitigation measures include a 24-hour emergency contact, adherence to the Traffic Signs Manual, notification letters to residents for traffic changes, and consultations with Clare County Council for turbine deliveries.
- Construction will be carried out in consultation with the local authority and residents, with the Community Liaison Officer providing updates.
- Chapter 13 of the EIAR reports existing watercourse crossing structures along the turbine delivery route; these will support oversized loads for turbine component delivery.
- The Route Survey Review details primary issues and solutions, like physical interventions, vehicle adjustments, or traffic strategies for Indivisible Load deliveries without the need to reinforce structures on the Turbine Delivery Route.
- All project-related Heavy Goods Vehicles will comply with legal axle load limits, and the proposed haul routes are confirmed suitable for the development.
- The Clare County Council roads department engineer evaluated the development's two proposed entrances on 02/02/2023.

- These entrances currently fail to meet the TII standard DN-GEO-03060 for sightlines and stopping distances, which require 160 metres visibility at a 2.4 metre setback.
- The developer plans to widen entrance radii and clear hedging to achieve the required sightlines, improving safety and functionality.
- The Roads Design Office raised post-construction concerns about the entrances on Fahymore local road L-7126, questioning if they would be gated.
- The entrances will remain and be gated post-construction, with maintenance vehicles not affecting the road's alignment.
- EIAR Section 13.8 states the project's traffic impact will be minor once operational, with neutral long-term environmental effects.
- Operational traffic, as described in EIAR Section 13.5.3, will involve routine visits by wind farm staff and occasional environmental monitoring.
- The Traffic Management Plan in CEMP 4.3.8 outlines that site entrances will be locked when inactive, with flagmen to manage traffic flow and ensure safe construction vehicle transit.
- Clare County Council Roads Department specifies that the proposed development should not disrupt roadside drainage or cause water to flow onto the public road.
- The applicant assures that surface water from the development will not flow onto the public road, with site layout and drainage designed to contain all runoff within the wind farm.
- Surface water at the main site entrance off the R466 will be directed to a roadside swale and settling pond, as indicated by the site entrance drawing.
- Water at the crossing point entrance off the L-7126 will drain into the quarry site and be managed by swales and settling ponds to prevent runoff onto the public road.
- The wind farm access route will have a 2% crossfall to guide water toward the swale and settling pond on one side, with an interceptor ditch leading to a diffuse outfall on the other.

- Settling ponds are engineered for sufficient retention time and low-velocity conditions to allow the settling of suspended solids before discharging water to the environment.
- A construction Waste Management Plan must be prepared and agreed with the Local Authority prior to construction.
- Refer to Waste Management Plan in Section 4.3.7 of the CEMP,.
- The Developer's goal, is to minimise waste on-site through prevention, reduction, reuse, and recovery, aligning with National Waste Management Guidelines.
- The Waste Management Plan for the project follows the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (2006).
- The plan will be finalised post-contractor appointment and before construction begins, in agreement with the Local Authority.
- An authorised waste management contractor will be appointed before the start of construction to provide waste collection receptacles and manage waste disposal.
- The ElAR states there are 26 dwellings within 1km of the proposed turbines, with a layout exceeding 2006 and 2019 guideline requirements by setting a minimum 720m separation distance.
- An involved landowner within this distance has consented to a reduced setback from their property.
- Section 11.4.4.3 of the ElAR summarises studies on wind farms and property values, citing major research from the US and Scotland due to a lack of Irish studies.
- The US study by LBNL (2009) analysed nearly 7,500 home sales near wind farms and found no consistent negative impact on property prices.
- The updated LBNL study (2013) also found no statistical evidence of wind farms affecting home prices before or after construction.
- LBNL acknowledges exceptions may occur where individual home values could be affected by proximity to wind farms.

- The Renewable UK-commissioned Cebr study (2014) observed no negative effect on house prices within a 5km radius of wind farms in England and Wales.
- The Climate Exchange study (2016) in Scotland found no consistent negative effect on house prices, with results varying by area.
- International literature suggests wind farms do not impact local property values, leading to the conclusion that the proposed wind farm in Ireland is unlikely to affect property values in the area.

6.1.3. **Re. Refusal Reason No. 3**

- Chapter 9 of the EIAR, Section 4.3 of the CEMP, and Appendix 10.2 outline soil and surface water management during construction, including procedures for handling excavated materials.
- A detailed evaluation of excavation, soil usage for landscaping, and integration with surface water drainage is provided in the appeal submission.
- Worst-case scenario planning for excavated materials assumes all will need spoil deposition; however, on-site reuse is planned for most.
- The CEMP's Section 4.3.4 details spoil management, with an estimated 86,400m³ of soil repurposed on-site within Ballyquin Quarry for berms, turbine ballast, and landscaping.
- Soil management plan drawings in Appendix 2 detail locations for on-site soil reuse.
- Construction of 1m high vegetated berms along access tracks will use c. 20,510m³ of spoil.
- Berm cores made of subsoil will be topped with topsoil for vegetation, using c. 3,200m³ of soil as backfill for turbine gravity foundations.
- Surplus spoil will be used for west site landscaping within Ballyquin Quarry confines.
- Soil bunds, designed as 2m high landscaped berms with 1:2 side slopes, will be topsoil finished for vegetation, providing c. 73,920m³ of spoil storage.

- Contingency plans in Table 3-2 account for 97,630m³ of total storage, allowing an 11,230m³ excess for unexpected excavation.
- Emphasis on the conservative nature of estimates, with the expectation that excavated material will be primarily used for construction and landscaping, far less than worst-case scenario predictions.
- Section 10.7 of the EIAR details hydrology and water quality mitigation measures, with a comprehensive Surface Water Management Plan (SWMP) in Appendix 10.2.
- SWMP outlines methods for drainage, managing water quality, and controlling silt; full implementation assured during construction of drainage infrastructure and watercourse crossings.
- Planning drawings provide layouts for the proposed drainage network, which includes interceptor drains, swales, and a settlement pond.
- The drainage network is designed as a multi-stage treatment train, enhancing sediment removal and treatment of discharges.
- Grassed swales and settlement ponds are key components for contaminant removal and water treatment, with diffuse outflow for further solids settlement.
- Regular maintenance of the drainage system is planned, ensuring efficiency and proper vegetation re-establishment.
- Primary waterbody contamination mitigation strategy involves appropriate drainage design with silt protection and control over runoff rates from the site.
- The proposed drainage and surface water management plan are designed to prevent contamination of water bodies within and downstream of the site, as detailed in the Surface Water Management Plan (SWMP).
- Pollution control measures for water quality protection are thoroughly detailed in the SWMP, with a monitoring programme to assess impacts on downstream water bodies.
- A pre-construction Surface Water Quality Monitoring Programme will establish baseline conditions, coordinated with aquatic ecology surveys for ecological impact assessment.

- During construction, water quality monitoring will be weekly, overseen by an Ecological Clerk of Works to ensure the effectiveness of mitigation measures.
- The site's turbine locations and new access roads are primarily situated above the Tulla-Newmarket-on-Fergus and Lough Graney Groundwater Bodies (GWBs), with the western part, including Ballyquin Quarry, lying above the Broadford Gravels GWB.
- The southernmost part of the site is underlain by the Lough Graney GWB, while the final section of the access road is above the Ardnacrusha GWB, known for its karstic flow regime.
- According to the Water Framework Directive interim classification by the EPA, all aforementioned GWBs have a "Good" status, with Tulla-Newmarket-on-Fergus GWB at "Review" risk and others "Not at Risk".
- The site's geology comprises a mix of Poor and Locally Important Aquifers, with the southern end featuring a Regionally Important Aquifer (Karstified), affecting productivity.
- No springs or wells are mapped within the immediate site or the construction route (CR), but there are several within a 1km radius.
- Post-mitigation impact on groundwater from construction is rated as Imperceptible, with mitigation measures detailed in Chapter 9, Section 9.6.2 of the EIAR.
- Groundwater receptor sensitivity is considered Low to Medium due to the presence of Poor to Locally Important Aquifers, and the magnitude of impact is assessed as Negligible.

6.1.4. **Re. Refusal Reason No. 4**

- Comprehensive mitigation measures and monitoring are proposed, including consideration of sensitive water bodies, soil management, invasive species, tree felling and in-combination effects as detailed in the NIS.
- The NIS, CEMP and SWMP contain detailed information on soil management, surface water management, and assessment of cumulative/in-combination impacts and invasive species management.

- The mitigation in the NIS outlines measures to prevent potential washout of sediment from stored spoil and designates a minimum setback of 100m for temporary storage areas from watercourses.
- Excavated material will be re-used on-site for landscaping purposes and to cover the turbine hardstandings and foundations post-decommissioning.
- Surplus soil, peat, or rock from the project will be utilised on site for landscaping, particularly in the creation of low berms.
- Temporary spoil storage will maintain a distance of at least 100m from watercourses, with spoil heaps compacted and covered to minimize runoff.
- Spoil stockpiles won't remain on the site post-construction.
- Measures to ensure minimal sediment runoff from excavated material include covering spoil heaps with geotextile and employing silt fences.
- To reduce silt runoff, all stockpiled material will be bunded and safeguarded against heavy rainfall.
- Adequate security measures will be implemented to prevent spillage from vandalism.
- Revegetation of soils after construction will serve to inhibit sediment runoff during the operational phase.
- The NIS contains mitigation which details the operational requirements and upkeep for settlement ponds.
- The Surface Water Management Plan (SWMP, Appendix 9 of NIS) furnishes details about the ponds, specifying a minimum setback of 50m from watercourses for all settlement ponds.
- Settlement ponds, as outlined in the CEMP, will be installed before construction, ensuring mitigation of any increase in surface water runoff and suspended solids treatment.
- The settlement ponds will have a diffuse outflow and will mitigate any increase in surface water run-off and treat suspended solids in the surface water runoff.

- There will be regular maintenance and clearing of deposits from settlement ponds to ensure their continued functionality.
- Site drainage systems, inclusive of silt traps and settlement ponds, will be established concurrently with or before construction.
- Settlement ponds will be included in the drainage system, reducing velocities in the surface water runoff from access tracks and hardstanding areas, and accounting for both pre and post-construction scenarios.
- Biological sampling and physico-chemical sampling will be executed at baseline sampling points, establishing a water quality baseline before construction.
- Silt traps and silt fencing will be implemented to control water flow, lengthen residence time, and facilitate controlled silt settling.
- The Environmental Manager will oversee the application of mitigation measures, having the authority to halt construction activity if potential adverse effects to water control and/or management arise.
- Regular visual inspections of on-site drains, silt ponds, and streams will be conducted during the construction period to ensure suspended solids do not enter adjacent water bodies. If suspended solids levels in watercourses exceed the baseline, construction work will be halted and remediation measures instated promptly.
- In-combination effects are addressed in detail within Section 4.4 of the NIS.
- The assessment covered wind and solar energy projects, large-scale projects, and housing developments.
- Furthermore, the assessment also included any projects, plans, or land management practices that could potentially lead to in-combination effects.
- The evaluation was mainly catchment-focused, aiming to identify all areas potentially connected to the aquatic environment of the proposed wind farm. This focus ensured a thorough search for projects, plans, or activities which might contribute to in-combination effects.
- The assessment also concentrated on the potential for in-combination effects on mobile species.

- Key areas of this focus were in-combination effects on avifauna due to operational wind farms.
- Another significant area was the in-combination effects on bats, which may arise from the loss of hedgerow and wooded habitats.
- An overview of tree felling requirements is provided in the AA Screening Report, indicating that up to 14.2 ha of felling is necessary.
- The felling will mainly impact plantation woodlands, but mixed broadleaved woodland, scrub, hedgerows, and treelines will also be affected.
- The EIAR Biodiversity Chapter contains detailed data on the areas and lengths of wooded habitats impacted.
- Five sets of habitat loss figures were calculated for five different turbine models/configurations to assess all possible scenarios.
- Table 3-2 details the maximum wooded habitat loss, with various woodland types and plantations affected, each assigned a value based on their ecological importance and maturity.
- Mixed broadleaved woodland (WD1) will suffer a 6% loss, affecting 2.0 hectares, considered of County Importance for long-established woodland and of Local Importance for semi-natural and immature plantations.
- Mixed broadleaved woodland/Scrub (WD1/WS1) faces a 10% loss over 0.6 hectares, classified as having Local Importance with a higher ecological value.
- Conifer plantation intended for the wind farm (WD4) will incur a 17% loss, spanning 8.6 hectares, rated as Local Importance with a lower ecological value.
- Conifer plantation designated for new oak woodland (also WD4) will experience a 6% loss of 3.1 hectares, similarly valued as Local Importance with a lower ecological value.
- Oak-ash-hazel woodland (WN2) will see a 3% loss of a relatively small area of 0.05 hectares, but holds a higher value due to its Local Importance.
- Hedgerows (WL1) will have a 12% reduction over 1,098 meters, and treelines (WL2) a 5% loss over 206 meters, both considered of Local Importance with a higher ecological value.

- A Biodiversity Enhancement and Management Plan (BEMP) is available in NIS Appendix 1 detailing proposed planting measures.
- There will be a planting of 1,400m of new hedgerows and 3.1 ha of oak woodland.
- As a result, there will be a net gain of 302m of hedgerow and 0.6 ha of broadleaved wooded habitat on the wind farm site.
- No measures from the BEMP were regarded as mitigation in the NIS.
- The NIS mitigation table provides mitigation measures for tree felling (measures 16 to 21 in Table 4-23).
- This includes adherence to various guidance documents including DAFM's standards for felling, Forestry Service guidelines, and DAFM's draft plan for forestry concerning the Freshwater Pearl Mussel in Ireland.
- A Felling License Application will be submitted to the Forest Service prior to construction, in accordance with the Forest Service's wind farm policies.
- Obtaining planning permission is a prerequisite for applying for a felling license, which must be presented with the application.
- The felling license mandates suitable replanting for the trees removed at the project site.
- The project site's forestry, designated for commercial use, was planned for future felling and replanting independent of the wind farm project.
- Section 3.3.7 of Chapter 3 of the EIAR specifies that replanting complies with the Forestry Act 2014 and Forestry Regulations 2017; the project involves felling over 14.2 hectares.
- The Forest Service of the Department of Agriculture, Food & the Marine is the authoritative body for forest licensing in Ireland.
- Due to replanting site demand, ongoing searches for suitable locations will continue through planning and until the felling license is secured.
- Selecting replanting sites during planning may lead to environmental challenges and missed opportunities for better locations.

- Felling and replanting will conform to licensing regulations, regardless of the final site chosen.
- Afforestation at the replanting site might disrupt the environment, affecting soil, water quality, habitats, and fauna; indirect impacts on mobile species' habitats are also considered.
- Ecological surveys, sediment control measures, and pollution prevention protocols will be employed to mitigate environmental impacts from replanting.
- Adherence to environmental afforestation guidelines aims to minimize potential negative effects.
- The project will proceed only after obtaining the necessary felling and afforestation licenses, ensuring all activities are approved by the relevant authorities.
- The NIS states no invasive species are currently at the proposed wind farm site, with an invasive species management plan (ISMP) in place for any potential spread prior to construction.
- The ISMP, included in NIS Appendix 2 and detailed with maps, prescribes eradication and containment measures if invasive species spread to the site, with offsite disposal of such material by licensed entities.
- Felling buffers are strategically placed to avoid overlap with invasive species stands, maintaining a minimum distance of 9m from Fuchsia and at least 44m from Schedule III species like Japanese knotweed.
- The ISMP anticipates the possibility of invasive species reaching the project area before construction begins and outlines specific management strategies.
- For Schedule III giant hogweed along grid connection road verges, the ISMP provides two treatment options to allow for a broader treatment window, ensuring flexibility and effectiveness.
- All invasive species material resulting from grid connection management will be transported and disposed of by licensed contractors to ensure compliance with regulations.
- Mitigation strategies for invasive species, as listed on pages 174 and 183 of the NIS, include conducting pre-construction surveys to confirm the presence and

spread of invasive species and adhering to the ISMP during all project works in affected areas.

6.1.5. **Re. Refusal Reason No. 5**

- EIAR Chapter 8 Biodiversity assesses the proposed development's impact on biodiversity at the wind farm site, grid connection, TDR nodes, and connected areas.
- Detailed mitigation measures outlined in the EIAR and CEMP will prevent significant residual impacts on biodiversity from the project.
- Ballymoloney Woods will experience a Permanent Slight Reversible effect at the County scale due to its maturity and the small percentage of habitat loss.
- The access track placement by the eastern edge of Ballymoloney Woods minimizes habitat fragmentation and utilizes half of an existing agricultural track to reduce tree removal.
- Route selection was informed by ecological surveys, identifying the current track and understory as the least impactful options.
- Surveys also examined woodland use by bats, mammals, and birds to protect roosting/nesting sites, foraging habitats, and commuting corridors.
- Ballymoloney Woods will undergo enhancement measures, including fencing off 3.8 Ha to promote regeneration, protected from deer and other herbivores.
- A new 3.1 ha oak woodland will be established east of Ballymoloney Wood through planting and natural recolonization.
- The design and location of the proposed access track are specifically to minimize ecological impact.
- Similar tracks in high-value conservation areas, like Killarney National Park, show that they can support biodiversity and do not significantly impede species movement.
- The Ballymoloney Wood access track will be minimally intrusive, with no human presence or artificial lighting, preserving natural conditions for wildlife, particularly bats.

6.1.5.1. ***Bats***

- A comprehensive impact assessment for bats is detailed in the ElAR Chapter 8 and the appended bat report prepared by Woodrow Sustainable Solutions Ltd.
- Surveys identified high levels of soprano pipistrelle, common pipistrelle and leister's bat activity, moderate levels of Myotis Spp. activity, and low levels of several other bat species.
- The ElAR bat assessment recognises that parts of the site are of high value to bats, particularly mixed broadleaved woodland and hedgerows, providing both foraging and commuting habitat.
- Potential for mature trees in Ballymoloney Woods to offer roosting features is assessed in the EIAR.
- A minor lesser horseshoe bat roost was identified in a derelict building outside the development footprint near the proposed site.
- Effects of foraging and commuting habitat loss/alteration due to vegetation removal were identified as Long-term Significant and Reversible at the Regional scale.
- Loss of mixed broadleaved woodland has been minimised; no turbines or lighting proposed within this habitat type.
- Specific bat species have been identified as most at risk from collision risk and/or barotrauma during the operational phase.
- Mitigation for bats is proposed in specific sections of Chapter 8 of the EIAR.
- The design avoided placing turbines in mixed broadleaved woodland to reduce impacts on bats.
- Bat felling buffers proposed for turbines in wooded habitats align with SNH (2021) guidelines.
- Feathering of turbine blades during low wind speeds and increased cut-in speeds are proposed to reduce bat activity during warm, calm weather.
- Operational phase activity monitoring and fatality monitoring are also proposed.

- Aviation lighting on turbines will flash intermittently to deter bats, with the light beam designed for aircraft operators, not illuminating areas below or above turbine nacelles.
- Lighting will be fitted with baffles, and red flashing lights are proposed to minimise bat impacts.
- Other mitigation measures include preconstruction surveys, ecological supervision, restrictions on lighting during construction, retention of potential roosting features, retention of felled trees for 24 hours prior to disposal, and hedgerow planting.
- Hedgerow planting will use fast-growing native species to divert bats from turbines, ensuring no net loss of linear commuting/foraging habitat and maintaining landscape connectivity for bats.
- With the mitigation measures from the EIAR, the resulting effect on local bat populations will be a "Not Significant-Slight Residual Negative Reversible Effect."

6.1.5.2. ***Birds***

- A comprehensive ornithological impact assessment detailed in the Environmental Impact Assessment Report (EIAR) and the appended ornithological report.
- Kestrel and buzzard exhibited the highest flight activity at the site, influencing collision risk modelling; other species' collision risk is negligible due to less recorded flight time.
- Collision risk for black-headed gull and whimbrel is assessed as imperceptible to slight; no significant feeding or displacement effects for these species.
- Lesser black-backed gull may forage at the site; no significant effects for swift, swallow, sand martin, and house martin.
- Potential indirect effects on kingfisher from water quality changes; significant construction-related effects on kestrel due to habitat loss and disturbance.
- Buzzard presence near the site implies negligible effects; sparrowhawk and barn owl face significant habitat loss and disturbance.

- Area is confirmed not to be a regular habitat for hen harrier or merlin; peregrine activity is low, indicating non-critical territory.
- No breeding wader activity recorded; habitat loss effects for certain waterfowl are imperceptible, with slight disturbance from construction.
- Small passerines affected by habitat loss and disturbance, except grey wagtail, which faces significant effects without mitigation.
- Mitigation for birds includes avoiding turbine placement in sensitive habitats, preconstruction surveys, and ecological supervision.
- New pollinator-friendly hedgerows to be planted; water quality measures to protect riverine birds.
- Operational phase monitoring and use of flashing lights over steady ones to minimise attraction.
- With mitigation, a slight-imperceptible reversible residual effect on birds is expected, except for kestrel facing moderate local effects.

6.1.5.3. ***Protected Mammals***

- The site is home to protected mammals such as badger, Irish hare, pine marten, and fallow deer, with the latter being an invasive species regulated under the Wildlife Act.
- Six badger setts identified in the area; three may be indirectly impacted by development, but no setts will be lost.
- Mitigation strategies include temporary hard blocking of setts, seasonal restrictions, and monitoring to reduce potential medium-term significant effects to long-term imperceptible effects.
- New badger setts discoveries will lead to NPWS notification and adherence to NRA Guidelines.
- Construction will not permanently impact badger habitats, with alternative setts available and ample foraging areas.
- Pine marten presence is confirmed; no dens located, but precautionary measures are in place for areas of felling.

- Tree felling will avoid pine marten breeding seasons or will be preceded by ecological surveys; licenses may be required for disturbances.
- Irish hare habitats are largely preserved; minimal habitat loss with no significant negative impacts expected.
- Short-term, imperceptible reversible effects on Irish hares are anticipated, with ecological checks in place to protect young during vegetation clearance.
- Special attention to vegetation removal is required outside March 1st to August 31st for hare leverets, and year-round for dense grasslands associated with breeding hares.

6.1.5.4. ***Marsh Fritillary***

- Marsh fritillary survey completed on 19th - 20th September 2022, optimal for larval web searches, focusing on habitats likely to support their food plant, devil's bit scabious.
- S. pratensis habitats were mapped; four larval webs with caterpillars found in areas outside the proposed development footprint.
- Limited areas of S. pratensis overlapped by proposed infrastructure, with some potential larval webs observed but without caterpillars to confirm marsh fritillary presence.
- Habitat conditions for marsh fritillary larvae sub-optimal due to light grazing and dense vegetation.
- Potential marsh fritillary larval web recorded in an area with no planned infrastructure; no caterpillars present.
- Precautionary principle suggests construction could injure/kill larvae; habitat loss is 410m², about 1.2% of the S. pratensis supporting area.
- Proposed effects of habitat loss deemed Short-term Imperceptible at Local Scale; larval injury/death could be Short-term Significant.
- Preconstruction surveys will reconfirm findings, with potential translocation of larvae to suitable habitats outside development footprint.

- Translocation involves marking and carefully excavating sods with pupae/larvae, relocating to prepared receptor sites with abundant S. pratensis.
- Immediate translocation will occur if larvae are within the development footprint, ensuring their safety.
- The Grounds of Appeal Planning Report responds in detail to observations submitted regarding the project.

6.2. Planning Authority Response

6.2.1. The Planning Authority's response is summarised as follows;

- The appeal documents have been considered, and the Planning Authority largely refers to the Planner's Report and other technical reports on file.
- The appeal document summarises EU, national, regional and local level policies related to renewable energy developments. These were fully considered by the Planning Authority. However, the potential negative impacts of the proposed development were seen to outweigh its contributions to national renewable energy and climate action targets.
- The appeal documents (Para. 3.1) state that the refusal of permission which issued was essentially against the principle of wind energy development. The Planning Authority strongly disagrees with this assertion. The Planning Authority is a firm supporter of renewable energy developments, as evidenced by permitted wind, solar, and hydro-based developments throughout the county.
- In accordance with the Wind Energy Strategy, areas within County Clare which are 'Strategic' or 'Acceptable in Principle' are the preferred locations for wind energy developments.
- The proposal site is located in an area which is Open for Consideration for wind energy developments.
- Under Objective WES10 of the Wind Energy Strategy, wind energy applications in these areas will be evaluated on a case-by-case basis subject to viable speeds, environmental resources, constrains and cumulative impacts.

- Key issues must be evaluated before a wind energy development can be deemed acceptable including wind resource, residential amenities, landscape and visual impacts, landslide susceptibility and potential impacts on tourism, recreation and amenities.
- In this instance, concerns relate to visual impact, traffic impact, impacts on water quality, and impacts on residential amenity, as reflected in the reasons for refusal.
- The Planning Authority considered that the proposed development was not appropriate at this location and did not fully comply with the Wind Energy Strategy. The policies of the Development Plan regarding visual amenity (CDP 14.2 and 14.7), and CDP11.47 which seeks to strike an appropriate balance between facilitating renewable and wind energy related development and protecting residential amenities of neighbouring properties.
- In terms of spoil management, 86,400m³ of subsoil from the hillside is required. 20,510m² will be used to create low height berms along both sides of the proposed access tracks. The Planning Authority dos not consider this a suitable option given the local gradients, extent of machinery movements required on the site and the lack of any proposals for the management of spoil during rainfall events.
- The appellant has indicated that the remaining spoil (73,920m³ or c.140,000 tonnes) will be used as landscaping to the west of the site, within Ballyquin Quarry. The Planning Authority considers the term landscaping to be misleading in this context.
- Given the stated timescale for the works, it is development for the purposes of Part 10 of the Planning and Development Act.
- This relocation is considered a significant development, and its impacts have not been fully assessed, especially in-combination with infilling work in the quarry site from a prior application, permitted under P.A. Ref. 17/552.
- The public notices associated with the application made no reference to importing/relocating such a significant volume of spoil into the Ballyquin pit.
- Early surveys for the wind farm specified the turbine locations, but the layout doesn't seem to account for consultation feedback, in particular from the NPWS, which advises on prioritising by avoidance and mitigation by design, in accordance with the National Biodiversity Action Plan.

- The fauna surveys (2020/2021) and geotechnical assessment (2021 and 2022) appear to post-date the definition of the site layout. This approach is not in accordance with the 2014 EIA Directive. The layout should be driven by ecological constraints.
- In general, it is not clear from the information submitted that the proposed project has been developed through an iterative process, seeking to avoid or reduce environmental effects, through options appraisal and evaluation, having regard to consultations and feedback from a range of bodies, agencies, landowners and the public.
- There is no evidence of a robust constraints study indicating the logic associated with the selected turbine locations
- In conclusion, the Planning Authority considers that there are numerous issues with this application as detailed in the planning report. The appeal hasn't adequately addressed these concerns, so An Bord Pleanála is urged to uphold the Council's decision to refuse permission.

6.3. Observations

6.3.1. A total of 69 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 below accordingly.

6.3.2. Clare Development Plan 2017-2023 and Wind Energy Strategy

- The proposed wind farm's location is not within a strategic wind energy zone, prompting concerns about its impact on nearby major tourist sites and whether it fits with intended energy planning, especially as it's located in a less favored "Open for Consideration" area.
- The rationale for choosing a site near Sliabh Bernagh, which is excluded from wind energy development for environmental and aesthetic reasons, is questioned,

suggesting that the site selection process may not have fully considered alternatives recommended by the County Development Plan.

- Doubts surround the development's compatibility with wind energy targets and local planning objectives, including the protection of visual landscapes and heritage sites, which are crucial for tourism in East Clare.
- Public opinions on wind energy are mixed, reflecting a tension between the potential benefits of wind projects and the preservation of the local landscape, amidst debates over the implementation of the Wind Energy Strategy and the treatment of areas marked as "Open for Consideration."
- The project's suitability is further complicated by reliance on outdated guidelines that may not reflect current wind turbine technology, raising the issue of whether the development is optimized for the region, and concerns over the lack of site-specific wind speed data call into question the project's strategic alignment with County Clare's development areas.

6.3.3. **Environmental Impact Assessment (EIA) Concerns**

- The EIAR did not consider the impact on important cultural heritage sites in the area.
- There is a lack of EIA for developments on the land since February 1990, particularly related to forestry activities.
- Recent deforestation effects were not accounted for in the NIS and EIAR.
- The EIAR omitted references to unauthorised developments when selecting the project site.
- Main access to the wind farm via an existing quarry raises questions about unauthorised use, particularly for heavy deliveries.
- Ballyquin Quarry unauthorised status is not acknowledged. The EIAR incorrectly states that Ballyquin Quarry has planning permission
- Non-compliance with conditions from Roadstone Ltd.’s operations, including those post-substitute consent and landfill permission 17/552, are of concern.

- The proposed wind farm's large footprint encompasses areas from Lackareagh Mountain to nearby settlements, without addressing the impact of recent tree felling.
- A man-made body of water, possibly a quarry lagoon, is not acknowledged in the EIAR as an unauthorised development.
- Assumptions regarding drainage and runoff in the EIAR are questioned due to potential connections to European Sites and unmet substitute consent conditions.
- The EIAR's section on "potential cumulative impact" does not consider the effects of non-compliant quarry activities.
- Documents in the EIAR appear selective, lacking in comprehensive ecological data, leading to doubts about the rigor of local ecology analyses.

6.3.4. **NIS / AA Screening Concerns**

- The NIS lacks a comprehensive risk assessment for the site's drainage basin impacting the Glenomra and Black Rivers, both crucial to the Lower Shannon SAC.
- Concerns are noted about the Kilbane River's flood response due to local land gradients, use, and soil types, which could lead to rapid floodwater discharge during heavy rainfall.
- The NIS and EIAR fail to address the environmental effects of recent deforestation in the area, raising questions about the thoroughness of the environmental review.
- The screening report's reference to the restoration of Ballyquin Quarry is criticised for being potentially misleading and inaccurate regarding compliance with substitute consent conditions.
- Doubts are cast on the claim of no likely significant effects, particularly regarding combined environmental impacts, suggesting a need for further scrutiny.

6.3.5. **Proximity to SAC's, SPA's, and NHA's**

- Questions arise about the suitability of placing a large-scale wind farm near Slieve Bernagh SAC, Lough Derg, and the Shannon River, areas with strict environmental protections due to their sensitive ecological status.

- The proximity of the wind farm to protected habitats may risk regulatory non-compliance and threaten the local bird population, while neighbouring heritage sites with delicate ecosystems may be negatively impacted.
- Concerns about the visual intrusion of the turbines, potentially setting a new height benchmark, are compounded by the cumulative effect of this project with the Carrownagowan wind farm, potentially altering the community's landscape and affecting both local ecology and tourism.
- Doubts linger over RWE's commitment to following environmental regulations, with the site's selection for development not being identified in local plans, and the potential ecological disruption to the SAC's wetlands, crucial for water management in the area, emphasizing the importance of adherence to EU conservation standards.

6.3.6. **Site Suitability**

- The suitability of the chosen location for wind turbines is questioned, with suspicions of financial motives tied to the Ardnacrusha Substation.
- Lack of evidence showing the project's alignment with the Clare County Development Plan 2017-2023 and the county's Wind Energy Strategy.
- The site is between a high-voltage line and residential areas, with 37 homes within 1km, raising proximity concerns.
- The location is near National Heritage Sites, Special Protection Areas (SPAs), and Special Areas of Conservation (SACs), suggesting potential conflicts with environmental conservation.
- The boggy nature of the site's ground is considered unsuitable for turbine foundations, which could have engineering and environmental implications.
- The developer is criticised for not considering alternative sites that are designated for wind energy and may be more appropriate.
- The site's designation as "Open for Consideration" suggests it is a lower priority for wind energy projects, which conflicts with the strategic zoning in the Clare County Development Plan.

- The proposed turbines' size and scale may not be appropriate for the area, considering its non-remote, populated setting.
- Wind speeds at the proposed site are lower than other areas, indicating that there may be more suitable locations for wind energy generation.
- The proximity of the site to settlements and its scenic value are seen as detrimental to the suitability for a wind farm.
- Lackareagh Mountain's absence from strategic locations in the Clare Wind Energy Strategy casts doubt on its selection.
- Observers note that while there are designated strategic areas for wind energy in Clare County, the project instead opts for a non-designated site.
- The peat bog terrain of the proposed site is not conducive to the structural demands of turbines, and the increased use of concrete and steel could be at odds with green energy principles.

6.3.7. **Procedural Issues**

- The planning document's noise impact map is contested for omitting several noise-sensitive residences, questioning the accuracy of data provided to the Clare County Council.
- Doubts are raised about the enforcement of planning conditions, reflecting community mistrust in regulatory compliance.
- The developer's offer of monetary compensation for potential health impacts is strongly opposed, indicating community concerns go beyond financial remedies.
- Discrepancies between site location maps and those in the NIS and EIA documents suggest inconsistencies in the presentation of the wind farm's boundaries.
- Figures in the project overview seem to misalign with those in the NIS, indicating possible confusion about the 'wind farm site boundary.'
- Inconsistencies in the mapping, especially around the east/south-east sections, lead to skepticism about the NIS and EIA's reliability and conclusions.

- RWE's visual representations focus on turbines and fail to address the broader environmental disruption caused by infrastructure and grid connections, suggesting a lack of comprehensive impact assessment.

6.3.8. **Unauthorised Development:**

- Uncertainty surrounds the planning status of the proposed wind farm site, as the appellant has not provided clear information, and Roadstone Limited's history of unauthorised development casts doubt on the legitimacy of their consent for the current planning application.
- Previous outline permission granted in 1970 and the “Section 261 Registration” in 2005 to Roadstone entities have led to a complex legal status for the site, with unauthorised developments and conditions from subsequent consents remaining unfulfilled.
- The Board is called to consider the site's history of planning breaches and unresolved issues, questioning the eligibility of landowners with a record of continuous unauthorised developments to consent to new applications, potentially invalidating the current one.
- Concerns are raised about the integrity of the application due to non-compliance with previous planning conditions and a portrayal that may misrepresent the full extent of unauthorised developments and their impacts, risking rejection of the application.

6.3.9. **Visual Impact**

- The proposed turbines, due to their height and location, could significantly impact the visual landscape, conflicting with the Clare County Development Plan's objectives to protect scenic views along the R466 Regional Road, a designated scenic route. This might detrimentally alter the road's visual amenity and potentially affect tourism.
- The visibility of the turbines from up to 20km away, particularly in Bridgetown village and surrounding areas like O'Briensbridge and Kilbane, could disrupt the

natural landscape aesthetics, with additional concerns about red aviation lights at night and the change in the quiet rural ambiance.

- The project, being the largest in Ireland, risks visually dominating the landscape and overshadowing nearby houses, villages, and landmarks such as the Sliebh Bearnagh Mountains and Moylussa. This dominance is exacerbated by concerns over the wind farm's impact on scenic routes, conservation areas, and the character of heritage towns like Killaloe/Ballina.
- The wind farm's location in the 'Hidden Heartlands,' as designated by the Clare County Development Plan, and its proximity to residential areas raise concerns about its potential to drastically change the area's visual aesthetics and compromise key tourism corridors.
- The project's visibility across three counties, along with the potential visual intrusion and nighttime disruptions from flashing beacons, could overshadow local scenic areas, threatening the region's character, deter new residents, and prevent future land use, impacting tourism and residents' enjoyment of their property.
- The refusal of a similar project, the Fahybeg Wind Farm, by Clare County Council due to visual impact concerns, underscores the potential issues with the current proposal and its alignment with the objectives of local developmental plans.

6.3.10. **Health and Wellbeing Concerns Arising from the Proposed Wind Farm Development**

- The proximity of turbine T8 to residential areas, specifically near Bridgetown, presents health and safety risks such as stress, "ice throw" hazards, and potential disruptions to living conditions, with manufacturers like Vestas recommending safe distances.
- Concerns have been raised about the impact on individuals with sensory sensitivities, including those on the autism spectrum, due to turbine noise and light flicker, potentially disrupting the tranquility valued in Bridgetown.

- There is evidence suggesting that wind turbines may cause health issues like sleep disturbances and mental health impacts. Precedents of legal challenges and issues with wind farms in Ireland highlight the potential dangers of noise pollution and the importance of maintaining a safe distance from residences.
- The proposed wind farm may contravene the Clare County Development Plan's goals for healthy, sustainable communities by affecting senior residents' active participation and causing stress due to reduced local amenities and children's safety concerns near the construction site.
- The long-term health impacts on residents are of significant concern, considering the wind farm's operational lifespan of 35 years, with implications for the overall wellbeing of the local population.

6.3.11. **Health and Safety**

- There is a risk of landslides associated with wind farm construction activities, particularly on peat soils, which is concerning for the proposed sites.
- The Clare County Development Plan specifically highlights landslide risks with wind farm construction, necessitating thorough risk assessments.
- The Geological Survey recommends detailed landslide risk assessments for each site, including modeling and mitigation strategies, which appears to be lacking in the current planning application.
- Given past incidents like Derrybrien and Meenbog, there is a significant demand for in-depth technical assessments of ground stability to prevent potential landslides.
- The proximity of construction activities to hills could trigger landslides, posing a danger to the environment and local structures.
- Wind turbines present fire hazards, with instances such as the 2022 Wicklow incident highlighting this risk, especially when turbines are placed near populated areas.
- The proposed development site's location beneath flight paths to Shannon Airport raises air traffic safety concerns.

6.3.12. **Noise Concerns**

- Noise generation during the operational phase of 30 years from turbine blades and generators is acknowledged in the planning application.
- An observer's visits to West Clare wind farms and discussions with residents revealed unanimous complaints about persistent noise, raising concerns about noise levels from the proposed taller turbines in Bridgetown.
- The landscape's topology, especially in Bridgetown situated in a basin, suggests that noise could intensify down slopes, potentially affecting residents "down the slope" and "downwind" from the development.
- There are no measures proposed by the developer to address the potential noise threat, causing concern for the community's serenity.
- The noise from the turbines could disturb farm animals, affecting local agriculture.
- Concerns are specifically raised for a child with hearing sensitivities in Bridgetown, highlighting the potential impact of construction and operational noise on individuals with special auditory needs.
- Health concerns stem from potential noise disturbances, with studies and WHO guidelines suggesting further research is needed into wind turbine noise and its health effects.
- Documented harmful effects of infrasound on animals and people, especially those with autism, highlight the need for protective measures such as increased distances between turbines and dwellings.
- The current 500m distance allowance in Ireland is criticised as inadequate, with newer scientific findings suggesting the need for greater distances for protection against infrasound.
- Sound test issues and the absence of predicted noise level data for wind speeds above 9m/s (where turbines operate optimally) call into question the reliability of noise assessments.
- Concerns about the capability of local roads to handle traffic and related noise disruptions during construction, and the lack of details on continuous noise

monitoring and decommissioning plans, emphasize the need for better planning and community protection measures.

6.3.13. **Economic Impact**

- Potential decline in tourism due to the wind farm could critically affect local businesses reliant on tourist traffic.
- Anticipated environmental repercussions and pollution from the wind farm may hinder tourism growth in the Lough Derg area.
- Claims of job creation during construction are viewed skeptically, with concerns that these roles are temporary and may not provide long-term local employment benefits.
- The number of permanent jobs post-construction is doubted to be enough to offset potential tourism industry job losses.
- There is a community sentiment that the promised construction jobs are exaggerated and will not adequately compensate for potential losses in other sectors.
- The cost/benefit analysis of the wind farm is questioned, with the perceived negative impacts on the community and environment potentially outweighing the benefits.
- Livestock fertility could significantly decrease due to the wind farm, with serious repercussions for local farmers.
- The viability of local activities, such as horse breeding, may be compromised, presenting considerable economic challenges.
- Property values in the vicinity of the wind farm might drop, impacting the financial stability of both farmers and residents.
- Despite potential short-term economic benefits, there are fears that the wind farm could result in long-term economic difficulties due to a reduction in tourism and adverse effects on local livelihoods.

6.3.14. **Tourism & Recreation**

- The construction and operation of the wind farm in East Clare are feared to have negative implications for tourism and the local economy, with businesses like pubs, cafes, and hotels potentially jeopardized.
- East Clare's reputation for eco-friendly tourism and activities such as water sports and festivals may suffer due to the wind farm's noise and visual impact.
- Doubts are cast on the developer's job creation claims during construction, suggesting these may not be long-term or skilled positions, and may not offset potential losses in tourism.
- The community perceives a lack of sustainable employment opportunities from the wind farm, and concerns are raised about the validity of job promises during construction.
- Livestock fertility and local agricultural practices such as horse breeding might be adversely affected, with concerns about a significant decrease in fertility and potential for stillbirths or deformities.
- Property values in the area could drop due to the wind farm, negatively affecting residents' financial stability.
- Despite short-term economic gains, the community is apprehensive about long-term setbacks due to the wind farm's impact on tourism and local livelihoods.

6.3.15. **Height**

- The proposed turbines would be exceptionally tall, unprecedented in both County Clare and across Ireland, creating a stark contrast in the landscape.
- Their notable height makes them significantly prominent, potentially affecting future wind farm applications in strategic areas.
- Descriptions by Fehily Timoney (FT) characterizing the turbines as "modest" in height are contested, as they are nearly as tall as Ireland's tallest wind turbine.
- Comparisons to the UK's tallest turbine show the proposed turbines are substantially taller, which misrepresents their true scale.
- Standing at 175 meters, the turbines would not only be taller than any in England but also dominate the local landscape.

- The designation of the area as 'Open for Consideration' by Clare County Council is deemed insufficient justification for the scale and height of the proposed turbines.
- The turbines' height is disproportionate compared to notable international structures, suggesting a significant visual impact on the local landscape.
- The average height of turbines in County Clare is 123 meters, with the proposed turbines at 176.5 meters, a substantial increase in height.
- Economic justifications for larger turbines by RWE, despite potential adverse local impacts, are met with skepticism, particularly in light of their offshore ventures.
- The size of the turbines, driven by economic objectives, raises concerns about their impact on local well-being and landscape conservation.
- The presence of such large turbines threatens to disrupt the historically and culturally rich landscape of the area.
- Their size and location near rural communities like Bridgetown are seen as inappropriate and potentially disruptive to the local way of life.

6.3.16. **Community Consultation Concerns**

- RWE Renewables' community consultation radius of 2km was seen as inadequate compared to the 20km used for assessing cumulative effects, raising questions about the effectiveness of their engagement with affected communities.
- Residents report generic communication from RWE, with allegations of selective door-to-door consultations and limited presence at community events, suggesting a discrepancy between claimed outreach and actual engagement.
- The company's community clinic, with limited advertisement reach, and discrepancies in information about "shadow flicker" between initial assurances and later admissions, indicate potential misinformation.
- Criticisms of the community consultation process include its failure to involve neighboring areas, accusations of misrepresenting community interest, and concerns over limited accessibility to consultation events.

- Discussions in parliament and community feedback suggest misinformation and division due to poor communication, with the relationship between O'Briensbridge and Bridgetown overlooked in consultations despite strong opposition evidenced by 300 objections.
- Observers feel the Renewable Electricity Support Scheme's guidelines for developer engagement up to a 10-20km radius were not prioritized by RWE, and there is a perceived focus on individual communications over comprehensive community engagement, contrary to the Clare County Development Plan's emphasis on dialogue.

6.3.17. **Impact on Local Community**

- The installation of large turbines may deter younger generations from settling in Bridgetown, altering the future demographics and disturbing the area's ambiance, especially at night.
- The constant turbine noise threatens Bridgetown's charm and serenity, raising skepticism about the promised community benefits and causing fears of a disrupted village character, particularly in Bridgetown and Mountpelier/O'Briensbridge.
- Road modifications for turbine delivery, including the removal of preserved trees, could negatively impact local amenities and the enclosed village character, as noted by the Planning Authority.
- Residents are poised to face disturbances like noise and shadow flicker, with concerns that financial benefits will not reach the local community but rather favor project investors.
- The wind farm's influence on Clare, Tipperary, and Limerick includes inadequate consultation for these regions, potentially compromising safety on walking and cycling routes, especially along the R466.
- Local initiatives, such as the campaign for a footpath along the R466, may be adversely affected by the development, reducing property enjoyment and degrading quality of life.

- The project risks socially excluding the community, contradicting the Clare County Development Plan's life quality objectives, and could hinder future housing projects, affecting vital community institutions.

6.3.18. **Residential Impact**

- The wind farm would affect residential amenity extensively, not just within 1 km of the site, due to increased traffic and HGVs on the haul route through local villages, impacting daily life over a significant period.
- Homes closest to the wind farm would experience a long-term moderate impact.
- The proposed wind farm's close proximity to existing homes raises concerns, and it may impose restrictions on land development, limiting opportunities for future generations to construct residences in the vicinity.
- Some residents near the proposed site claim their houses are not represented on several maps provided within the planning application.
- The wind farm could reduce outdoor amenities and disrupt activities like walking and cycling, in potential contravention of the Clare County Development Plan's objectives.
- The proposed wind farm's location near residents and Bridgetown village is deemed inappropriate.
- A family living close to the proposed site values the current natural soundscape and is concerned about the disruption the turbines might cause to the tranquillity of the area.

6.3.19. **Property Devaluation**

- International research, including studies from the U.S., Scotland, the UK, and the London School of Economics, indicates property values near wind farms may decrease by 20% to 25%, with properties sometimes becoming unsellable.
- Local fears suggest that the presence of wind turbines may deter future generations, leading to socio-economic decline and questions about compensation for property devaluation.

- Studies, such as one from Germany, support concerns of up to 23% decreases in rural house prices due to wind farms, potentially conflicting with the objectives of the Clare County Development Plan.
- Despite advancements in wind turbine technology and different living patterns in Ireland, there is no statutory provision for property devaluation due to wind farms, except for "injurious affection" cases.
- The exceptional height and visibility of the proposed turbines are expected to notably impact property values within a substantial radius, with immediate devaluation upon sale, especially for homes within a 1km radius.
- The wind farm is viewed as an impediment to future land use and settlement in the area, with Danish studies citing negative impacts on property prices up to three kilometers from onshore turbines.

6.3.20. **Impact on Local Agriculture**

- An observer expresses concern that the proposed development would have a detrimental impact on his farm and the surrounding land.
- Streams bordering the observer's farm are prone to flooding, especially after excavation or forestry work on the hills. Flood damage could be exacerbated due to the proposed wind turbines.
- Photographic evidence is provided to showcase the extent of damage from previous flooding incidents.

6.3.21. **Air Quality**

- The EU Directive's focus on air quality aligns with concerns that wind farm construction could negatively affect those with respiratory issues, particularly as Bridgetown National School near the haul route may experience pollutant build-up from local wind patterns and traffic.
- An increase in construction traffic poses health risks, especially to children at local schools, potentially worsening respiratory conditions, a concern backed by EPA data on diesel vehicles and NO2 emissions from HGVs.

- Global research connecting vehicle emissions to childhood asthma emphasizes the health risks for communities near haul routes. The construction phase is expected to significantly raise air pollution levels, a point not fully addressed in the RWE report.
- The anticipated rise in HGV traffic during construction contravenes the Clare County Development Plan's objectives regarding air quality and health, which is particularly concerning for schools situated along the haulage route.

6.3.22. **Sulphur Hexafluoride (SF6) - Environmental Concerns**

- SF6 used in turbines is a potent greenhouse gas, far exceeding CO2's impact.
- Potential SF6 leaks pose serious environmental risks.
- SF6's use contradicts green energy principles due to its toxicity and ozone layer impact.
- The wind industry reportedly favours SF6 for its low cost despite available alternatives.

6.3.23. **Light Pollution Concerns**

- Nighttime aircraft warning lights on turbines could disrupt the region's currently low light pollution levels.
- Potential contravention of Clare County Development Plan's objectives to preserve night skies and minimize light pollution.
- Adverse effects on local ecosystems and the health of sensitive community members due to light pollution.
- Lack of specific Irish legislation to manage light pollution, despite a significant increase in artificial light over two decades.
- Threat to wildlife, particularly nocturnal species, as only a small percentage of Ireland retains dark skies free from artificial light.

6.3.24. **Shadow Flicker Concerns**

- Testimonies from individuals living near wind farms highlight severe effects of shadow flicker.
- Proposed solutions like rotor-stopping software are unsuitable, especially in Irish weather conditions, and do not protect outdoor enthusiasts.
- Shadow flicker occurs when the sun passes behind turbine rotors, casting intermittent shadows.
- Lack of clarity on potential impact of shadow flicker on residential buildings near turbines with clear views, raising doubts about mitigation measures adherence to guidelines.
- Apprehensions about insufficient mitigation measures proposed in the Environmental Impact Assessment Report.
- Concerns that shadow flicker from the sun setting behind the development could affect residents' well-being.
- Shadow flicker is a substantial concern with the potential to make people ill.
- Concerns regarding rotating turbine blades causing disruptive shadow flicker during specific times of the day.

6.3.25. **Birds**

- The proposed wind farm risks breaching EU Birds Directive protections, particularly for the Hen Harrier, which makes up 2.5% of Ireland's breeding population in the Slieve Bearnagh to Fahy Beg sanctuary.
- Raptors such as Merlin and Peregrine Falcon breeding locally may encounter increased collision risks, and habitat disruption from the wind farm construction could further affect these bird habitats.
- Reports suggest wind farms may decrease bird densities and alter behaviors, with global data backing significant risks of bird casualties, including for species in the vital Blanket Bog corridor.
- Concerns are raised over the accuracy of the developer's 2019-2022 surveys and the Woodrow Report's adherence to current guidelines, potentially overlooking ecological disturbances.

- The wind farm's impact on the food chain and local biodiversity, as highlighted in the Clare Biodiversity Plan, raises the potential for adverse effects on various species, from Hen Harriers to nocturnal hunters like White-tailed Eagles.

6.3.26. **Bats**

- Bats, protected under the Wildlife Act of 1976, the EU Directive 92/43/EEC, and international agreements like the Bern and Bonn Conventions, could face habitat threats from the wind farm development, potentially conflicting with the EU Habitats Directive and the Clare County Development Plan.
- The development site's favorable conditions for bats, evidenced by eight recorded species, are ecologically significant; however, the wind farm could disturb roosts, fragment habitats, and pose collision risks, with bats potentially avoiding areas up to 1000m from turbines.
- Specific threats to Lesser Horseshoe and Leisler bats, concerns about the adequacy of the EIAR bat survey, and the potential underrepresentation of impacts in the non-technical project summary question the development's compliance with the EU Biodiversity Strategy for 2030.
- Proposed mitigation measures, like a 50m buffer zone, may not be sufficient according to Eurobats guidelines, and the cumulative impact of regional wind farm developments might be underestimated, underscoring the need for comprehensive surveys and local engagement for accurate bat roost data.

6.3.27. **Animal Health Concerns**

- Worldwide studies indicate that noise and infrasound from turbines negatively affect livestock health.
- Proximity to wind farms has been linked to a significant decrease in livestock fertility and milk production, with reductions up to 90% reported.
- An increase in stillbirths and deformities in livestock offspring, such as 'boxy foot', has been observed near wind farms.

- Horse breeders, especially in Bridgetown, report difficulties in breeding and fear for the health of their horses due to wind farm noise.
- Local wildlife displacement, particularly of deer and badgers, may increase Bovine Tuberculosis transmission to livestock.
- Economic challenges for farmers are anticipated due to wind turbine noise, with global studies supporting these concerns.

6.3.28. **Wildlife and Biodiversity Concerns**

- Wind turbine research indicates an annual impact of 1200 tons of insect deaths, potentially disrupting ecosystems, while construction poses risks to local biodiversity, including flora, fauna, and the potential spread of TB from disturbed wildlife such as deer and badgers.
- The ecological importance of the area is underlined by the presence of various species, including Annex I listed birds and raptors; however, survey gaps, like missing Red Grouse data, cast doubt on the EIAR's comprehensiveness.
- The proposed development poses threats to wildlife and habitats, including protected species, with significant soil excavation and movement increasing contamination risks, and could lead to the loss of historical landscapes like Ballymoloney Wood's ancient oak forests.
- The felling of 14.2 hectares of woodland and the proximity of invasive species to development sites are critical concerns, along with Slieve Bearnagh's upland species endangered by excavation.
- Criticisms of the Applicant's reiterative appeal and brief field studies suggest the need for enhanced protection measures, especially with the discovery of the Marsh Fritillary Butterfly and potential EU Habitat Directive infringements affecting the Irish Hare and ancient woodlands.
- The need for a comprehensive supplementary ecological study is emphasized, alongside the protection of Badger Setts and the area's rich biodiversity, with the current development prioritizing short-term gains over natural heritage and

lacking crucial ecological data, such as impacts on rare species like the Marsh Fritillary butterfly and badgers.

6.3.29. **Traffic and Road Safety Concerns**

- The O'Briensbridge to Bridgetown road is already in poor condition, and increased project traffic could exacerbate its state.
- Safety concerns for school children and pedestrians are heightened by the close proximity of heavy vehicle traffic to Bridgetown National School.
- Elevated noise and air pollution from increased traffic could harm the health of students and the local community.
- The narrow Fahy Beg Road might become unsafe for local children due to potential use by construction vehicles.
- Anticipated traffic surges raise worries about noise pollution and air quality, particularly impacting school students and staff.
- RWE's study predicts a daily increase of 150 vehicle trips, causing potential congestion and strain on local roads.
- Heavy construction traffic could compromise road safety and damage infrastructure not designed for such loads.
- Health concerns over increased heavy vehicle traffic include the risk of emergency service delays due to blocked roads.
- Clare County Council's roads department report suggests long-term damage to road infrastructure from heavy traffic.
- Increased traffic near the local school may elevate PM 2.5 levels, posing additional safety risks.
- The current condition of Broadford to Bridgetown Road is poor and might not sustain increased traffic from the project.
- The proposed development would contravene Clare County Development Plan objectives on road safety and maintenance.

6.3.30. **Construction Phase Impact**

- A technical evaluation of ground conditions is critical for turbine foundation stability and to assess potential landslide risks to residents and landowners.
- The Environmental Impact Assessment Report requires environmental changes for specific nodes, indicating landscape alterations, and unmanaged construction traffic could pose road safety hazards.
- Local traffic will be notably disrupted by the transport of turbine components, necessitating road closures, alterations, and infrastructure modifications to accommodate heavy loads.
- Concerns extend post-construction to road wear and adverse effects on local tourism due to landscape changes, with historical trends showing possible inadequate environmental restoration post-construction, leading to landscape degradation.
- Construction traffic may increase road safety incidents and commuting challenges for years, with the community potentially uninformed about the expected road usage impact.
- Local development plans for pedestrian and cycling routes might be jeopardized by construction, and there is community concern over long-term road and landscape conditions affecting the area's appeal, as evidenced by local media reports of opposition to similar projects.

6.3.31. **Trees**

- The 2015 Clare County Council tree survey underscores the importance of trees along the R466, threatened by wind farm development, with proposals for new tree planting deemed insufficient for conservation.
- Ballymoloney Wood, a County Importance broad-leaved woodland with mature beech habitat, is at risk from the construction, a concern seemingly overlooked in the application.
- Questions arise over the necessity of felling licenses and tree replanting strategies, amidst discrepancies in wind farm distance measurements and

potential restoration inadequacies, particularly for protected trees and hedgerows.

- The irreplaceable ancient woodlands require sensitive management, absent in the current plans, with the necessity to fell trees for access tracks and the lack of an independent flora survey for Ballymoloney casting doubts on the EIAR's thoroughness.
- The integrity of Ballymoloney Wood, designated for preservation in county development plans, is at risk from proposed changes, including tree felling near historic structures, with compensation efforts like new oak woodlands seen as inadequate.

6.3.32. **Ground Stability and Construction Impact at Fahybeg**

- Ground stability is highlighted as a key concern for construction on unique geological features, which may affect existing structures.
- An Observer’s residence in Fahy Beg, on sandy terrain, required special foundations to mitigate risks like sinking, suggesting similar measures may be needed for wind turbine construction.
- The proposed excavation for turbines and industrial roads raises fears of destabilizing local homes, with the Observer noting a lack of planning detail on foundational stability.
- Fahy Beg's peaty soil poses significant challenges due to its instability, necessitating substantial foundations for the turbines, which could impact the peat bog ecosystem.
- Historical mudslides in Ireland caused by construction on peat highlight the need for careful wind farm site selection and risk assessment to prevent similar incidents.

6.3.33. **Hydrological Concerns**

- The construction of Fahy Beg's seven turbines, involving roughly 1500 cubic meters of concrete each, poses an extensive environmental footprint, potentially altering the landscape and affecting local waterways, wildlife, and human water sources, including concerns for downstream wells.

- Hydrological challenges posed by the project include wastewater management from concrete trucks and site facilities, with risks of water contamination in the Shannon area and questions about the effectiveness of dust suppression methods.
- Observer express doubts regarding the efficacy of mitigating hydrological changes and highlight the absence of a detailed silt management strategy, essential for protecting rivers like the Black and Ardclooney and preventing impacts on the Shannon catchment's spawning grounds.
- Construction-related soil erosion could threaten downstream areas, impacting agriculture and aquatic life in the Glenomra Valley, while Teagasc reports underscore the ecosystem's vulnerability to extensive development jeopardizing water quality.
- Elevated construction sites using substantial concrete may disrupt natural water absorption, escalating runoff and flood risks, with residents relying on well water facing potential contamination and no clear developer plan to safeguard water integrity.

6.3.34. **Water Quality and Supply:**

- The wind farm construction poses risks of contaminating local water supplies, with sediment, nutrients from tree felling, and wet concrete use impacting water quality, potentially compromising local agriculture's sustainability and water protection efforts.
- The area's geology, consisting of sandstone quartz, results in shallow wells that are susceptible to contamination or depletion, threatening water supply to residences and farms; moreover, development activities, including groundwork on the mountain, could disrupt water flow and well systems.
- There are concerns about excavation, dust, and spillages polluting water, possible oil leaks from turbine malfunctions causing ecological damage, and the jeopardy of water sources for homes dependent on hillside springs.

- The construction could lead to flooding, mud surges, culvert overflow on Ballynevin Road, reduced water absorption due to global warming effects and tree removal, and potential contamination of the Black River and River Shannon.
- Observers note the lack of concrete plans to address these water-related issues, which may exacerbate flooding risks, endanger rivers marked for conservation, and impact aquatic ecosystems and recreation, all while soil stability, erosion, and ground slip risks remain inadequately addressed, contrary to the objectives of the Clare County Development Plan for groundwater protection.
- The area's agricultural viability is at stake with livestock farming depending on safe water supply, and global instances of wind farm-related water pollution underscore the urgency for proactive local water supply protection measures.

6.3.35. **Architectural Heritage**

6.3.35.1. ***Impact on Protected Structures and Heritage Areas***

- The visibility of turbines from O'Briensbridge Architectural Conservation Area and nearby Protected Structures could adversely affect the visual heritage of Bridgetown and Kilbane, contravening Clare County Development Plan's objectives for heritage preservation.
- Concerns mount over the wind farm's presence in the historically significant Glenomra area, with potential harm to the historic spring well "Tobernasool" and neglect of a historical path and public right of way near TDR Node 31 in planning discussions.
- Structural safety concerns for traditional lime mortar structures near planned excavations and watercourse installations, including "Tobar na Súil" and "The Forge" (RPS No; 073), suggest RWE's insufficient impact assessment on local heritage sites.
- Observers contend that the proposed development could impact protected structures along the TDR and Node sites, with doubts cast on the claim that no structural reinforcement is needed for landmarks, potentially threatening the

integrity of the historic landscape and suggesting an inadequate cultural heritage impact assessment in the EIAR.

6.3.36. **Land Ownership and Related Concerns**

- Concerns have been raised about the authenticity and legal authority of a support letter for the wind farm project linked to Folio CE19282, with the signatory allegedly not the lawful owner, which brings into question the legitimacy of the project's endorsements.
- Permissions for necessary works along the Turbine Delivery Route (TDR), particularly on private lands defined by folios CE12777 and CE1811, have not been secured, leading to potential legal and environmental issues.
- RWE's plans for "temporary widening works" on private land, detailed in the EIAR without landowner consultation, and the assumption of road-widening rights between nodes 31 and 32 could result in legal disputes and conflict over property rights.
- In contrast to RWE's approach, ED Renewables has engaged proactively with landowners regarding tree and hedgerow alterations in their Lackareagh Windfarm project, underscoring the necessity of careful environmental assessment and adherence to regulations.
- Unresolved issues concerning permissions for works along the R466 through Bridgetown require rigorous scrutiny for regulatory compliance, as highlighted in the initial submission to Clare County Council.

6.3.37. **Connection to the National Grid Concerns**

- Concerns have been raised about the methods used to connect regional Wind Farms to the national grid and the potential impact of each method.
- A conflict is noted in the EIAR regarding grid connection construction at the Ardnacrusha 110kV Substation.
- Development activities at Lackereagh and Knockshanvo could intensify grid connection issues and increase HGV traffic significantly.

- The Ballyglass Solar project, approximately 1km from Ardnacrusha, adds to the complexity of the grid connection challenge.
- The simultaneous developments aiming to connect to the Ardnacrusha substation may put a strain on the existing infrastructure.
- The grid connection to France brings up the contentious subject of nuclear power in Ireland, conflicting with the country's traditional stance on nuclear energy.
- There is a worry that overhead wires from the Wind Farms could create "electro smog," affecting the environment.
- Using underground cables as an alternative could cause further disruptions to local roads and villages.

6.3.38. **Telecommunications Concerns - Impact on Connectivity**

- Concerns have been voiced about the wind farm exacerbating existing connectivity issues caused by a single mast on Lackareagh Beg.
- Local residents fear that the proposed turbines will further diminish phone signal strength, impacting essential farm operations and business activities reliant on stable coverage.
- The development would have a negative impact on both TV and telecommunication signals in the area.
- The potential for the wind farm to cause electromagnetic interference with local mobile communication has been overlooked in the project assessment.
- Signals from the mast on Lackaragh Mountain may be blocked by the wind farm, affecting mobile and internet reception, which could contradict the objectives of the Clare County Development Plan.
- A local family’s home, dependent on a Vodafone mast on Lackareagh Mountain for internet vital for work and education, risks signal interference from the proposed turbines.
- The height of the turbines is expected to increase signal interference, presenting a significant issue for internet connectivity in the rural community.

6.3.39. **Immediate and Long Term Impacts**

- Wind turbine construction and operation pose risks of noise pollution disrupting local life and causing stress, with potential alterations to local wind patterns affecting weather, microclimates, and natural behavior of vegetation and wildlife.
- The wind farm's creation threatens natural habitats and ecological balance, with operational noise disturbing residents' sleep and well-being, impacting property values, and changing the visual landscape.
- Health concerns from noise and vibrations, community division over the wind farm's perceived drawbacks, environmental disturbances from infrastructure work, and the challenges of turbine disposal, including potential "wind turbine graveyards," highlight the environmental and social risks.
- The long-term negative impacts on the community and landscape, including environmental hazards from non-recyclable materials and the project's finite 35-year lifespan, may not justify the short-term benefits like temporary job creation.

6.3.40. **Cumulative Impact and Decommissioning**

- Concerns over the cumulative effects of several proposed wind farms in strategic East Clare areas without a comprehensive development plan, with criticism directed at the incomplete visual impact assessment that currently covers only the Carrownagown wind farm and 8 proposed turbines.
- The collective visual and environmental impacts of the region's proposed wind farms, including those by RWE, have not been adequately addressed, lacking transparency and full assessment, particularly given the proximity of four proposed projects around Bridgetown.
- The potential for substantial turbine increases along the R466 scenic route due to multiple developments, such as Carrownagowan, Lackareagh, and Fahybeg, and the shared infrastructure plans of Lackareagh and Fahybeg, highlight the need for a thorough cumulative impact assessment.
- With the possible addition of turbines from the Knockshanvo Wind Farm bringing the total to 43 in the region, there is a call for evaluating alternative wind farm

locations to minimize residential and scenic route impacts and concerns regarding the decommissioning process and the environmental risks of abandoned turbines.

6.3.41. **Concerns Regarding the Developer**

- RWE AG's history includes community disruption in Germany and legal actions against environmental policies, indicating a potential focus on profit over environmental and local interests.

6.3.42. **Legislation / Case Law**

- The CJEU case A v Others C-24/19 emphasises the necessity for an SEA before approving plans/programs influencing projects like wind farms; without it, permissions should be annulled.
- Irish wind farm policy based on N-REAP and NECP lacks an SEA, potentially invalidating project permissions as per EU law.
- The Wind Energy Development Guidelines as a plan requires SEA; lacking which, it cannot substantiate wind farm permissions, and current EU energy framework's relevance to Ireland remains speculative.

6.4. Further Responses

None

7.0 Assessment

7.1. Introduction

7.1.1. In undertaking this assessment, I have reviewed of the entire contents of the application file and visited the proposed development site and its environs and considered the context within national, regional, and local policies and guidelines relevant to wind farm development. My assessment is informed by the Planning Authority's report, technical reports contained within, submissions from prescribed bodies, third-party observations, and submission from Clare County Council and the appellant.

7.1.2. This assessment is structured into three interconnected sections: the Planning Assessment, the Environmental Impact Assessment (EIA), and the Appropriate Assessment (AA). At the outset, I consider that the main issues for consideration are the reasons for refusal as stated by the Planning Authority along with Environmental Impact Assessment and Appropriate Assessment. The Planning Authority's reasons for refusal can be broadly summarised under the following headings;

- Impact on Landscape and Visual Amenity,
- Impact on Residential Amenity,
- Construction Impact and Water Protection,
- Ecological and Hydrological Impact,
- Impact on Biodiversity

7.1.3. To streamline this assessment and avoid duplication, I will consolidate the evaluation of Construction Impact and Water Protection, Ecological and Hydrological Impact Assessment, and the Impact on Biodiversity within the Environmental Impact Assessment (EIA) and Appropriate Assessment (AA). This approach will ensure a cohesive and focused analysis, providing clear insight into the environmental implications of the proposed development.

7.1.4. My assessment will commence with an evaluation of the proposed development's alignment with relevant renewable energy policies, followed by assessment of the impact of the proposed development on landscape and visual amenity, and residential amenity. This will be followed by the environmental impact assessment and appropriate assessment of the proposed development .

8.0 **Planning Assessment:**

8.1. **Alignment with Renewable Energy Policies**

8.1.1. The Climate Action Plan 2023 sets out a detailed sectoral roadmap designed to deliver the proportion of renewable electricity up to 80% by 2030, including a target increase of up to 9 Gigawatts of onshore wind energy by 2030 (Section 12.1.4). The proposed pathway includes a more rapid build-out of renewable generation capacity, including wind power generation technologies. The proposed 8 no. wind turbines have an estimated maximum export capacity (MEC) of 31.2 – 38.4 MW, depending on the final

turbine technology installed. As stated in Section 2.2.1 of the EIAR, assuming an installed capacity of 31.2 MW, the proposed wind farm has the potential to produce c. 95,659 MWh (megawatt hours) of electricity per year. It is considered that such development would contribute to achieving the Climate Action Plan's target of achieving 80% renewable electricity and reducing greenhouse gas emissions by 51% by 2030. The nature and export capacity of the proposed development accords with National Policy Objective 55 of the National Planning Framework (NPF), which seeks to promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low-carbon economy by 2050.

8.1.2. At a regional level, the Regional Spatial & Economic Strategy for the Southern Region, 2020 supports the delivery of the NPF and implementation of the Climate Action Plan, whereby Regional Policy Objective 99 seeks to support the sustainable development of renewable wind energy (onshore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines. The nature of the proposed development is consistent with this objective.

8.1.3. At local/county level, Section 2.4 of the Clare County Development Plan 2023-2029 sets out how Clare County Council will seek to take a lead role regarding renewable energy technology to assist in meeting national, regional and county targets in energy consumption and CO2 reduction. Table 2.2 of the Development Plan sets out renewable energy resource targets for County Clare to 2030 and sets a target of 550 MW and 1,590 GWh/y. This target is included in the Clare Wind Energy Strategy (2023). One of the core objectives of the Clare Wind Energy Strategy (Interim Version, April 2023) is to promote economic development through wind energy and other renewables in the County, underpinning the need for energy security, the promotion and establishment of a low carbon economy and the development of green business within the County (Section 1). The proposed development with an estimated maximum export capacity (MEC) of 31.2 – 38.4 MW would contribute to the Clare County Development Plan’s renewable energy resource targets.

8.1.4. Having regard to the above, I consider that the nature and export capacity of the proposed wind energy development is supported by national, regional and local policies and objectives regarding renewable wind energy. An assessment of the

appropriateness of the location of the proposed development is addressed further below.

8.2. Impact on Landscape and Visual Amenity

8.2.1. The Planning Authority refused permission for the proposed development on the grounds that, having regard to the location of the site on lands identified as 'Open to Consideration' for windfarm developments as set out in the Clare Wind Energy Strategy and the County Development Plan 2023-2029, the Planning Authority considers that the proposed turbine structures, by reason of their height (tip height up to 178m), scale, and sitting on this open and exposed upland landscape would constitute a prominent feature on the landscape from both local and long-range viewpoints. Furthermore, the Planning Authority considered that the proposed development would be highly visible from, and negatively impact upon, the R466 Regional Road, which is a designated Scenic Route and would negatively alter the character of this rural landscape. The proposed development would, therefore, seriously injure the visual amenities of the area, would contravene Objectives CDP14.2 and CDP14.7 of the Clare County Development Plan 2023-2029, and would be to the proper planning and development of the area.

8.2.2. The Planning Authority's assessment of the proposed development regarding this issue is summarised in Section 3.2.3 above. The Applicant's Grounds of Appeal regarding this issue are set out in Section 6.1.1 above.

8.2.3. Objective CDP14.2 of the Development Plan seeks to permit developments in 'settled landscapes' to enhance quality of life and stimulate economic activity, provided that such developments adhere to all relevant plan provisions, resource protection, and prioritise site and design choices that minimize visual impacts. There's a specific emphasis on avoiding development intrusion along scenic routes and ridges. Moreover, it is required that any development demonstrates a selection of sites that avoid visual prominence, effectively uses existing landforms and vegetation to shield visibility from key public viewpoints and employs architectural designs and materials that are visually unobtrusive.

8.2.4. Objective CDP14.7 of Clare County Council is to safeguard sensitive areas from unsuitable development while enabling developments that benefit the rural

community. It requires proposed developments to be considerate of their impact on views from public roads towards scenic areas, ensuring they are designed and situated to minimise this impact. Additionally, the objective mandates adherence to high standards in the location, siting, design, finishing, and landscaping of developments.

8.2.5. In summary, the proposed development consists of 8 no. wind turbine generators, one permanent meteorological mast, the construction of new site tracks, the upgrade of existing agricultural tracks, onsite substation compound, accompanied by ancillary civil and electrical infrastructure. As stated in the EIAR, the proposed turbines will adhere to specific specifications, which include three-bladed, horizontal-axis type turbines with tip heights ranging from 169m to 176.5m, rotor diameters ranging from 131m to 138m, and hub heights ranging from 102.5m to 110m. The associated grid connection will consist entirely of underground cable and will connect the on-site substation to the existing 110kV substation at Ardnacrusha, Co. Clare.

8.2.6. Map E of the Clare County Development Plan 2023-2029 designates provisions for renewable energy and associated infrastructure and indicates that the site of the proposed development is located in an area 'open for consideration (wind energy)'. Section 1 of the Clare Wind Energy Strategy 2023 (Interim Version) notes that 'in preparing the current strategy landscape and visual considerations…a balance is now sought between achieving greater energy security.., achieving commitments at national and international level regarding reductions in greenhouse gases, promoting renewable energy and other environmental considerations'.

8.2.7. Section 14.2.1.3 of the Clare County Development Plan refers to Landscape Character Areas (LCAs), where Figure 14.2 indicates that the site is located in LCA No. 8 Slieve Bernagh Uplands. Section 4.9 of the Landscape Character Assessment of County Clare 2004 describes the Slieve Bernagh Uplands LCA as a region with distinct characteristics. This area is characterised by gentle and rolling hills, with elevations reaching up to 530m at Sliabh Bernagh. Settlements within this region are scattered and primarily located along the lower fringes. Notably, hedgerows are a prominent feature in the landscape, creating a wooded atmosphere, and they are often planted with fuchsia around dwellings. The Slieve Bernagh Uplands are characterised by their remote and isolated nature. They offer panoramic views that extend to Lough Derg, lower drumlin farmland, and the Shannon estuary. The vegetation in this region is

predominantly heather moorland, complemented by plantation forests and semi-natural deciduous woodlands on the lower slopes and along watercourses. Regarding Landscape Condition and Sensitivity, the Landscape Character Assessment notes that the higher slopes would be sensitive to very visible development. Sliabh Bernagh and Woodcock Hill peats are classified as 'visually vulnerable or sensitive under the county development plan. The skylines of Sliabh Bernagh and Woodcock Hill to Ballycar are also designated as high amenity under this current plan'.

8.2.8. Map C of the Development Plan sets out Landscape Designations and indicates that the site is located in a 'settled landscape'. This map also designates 'Scenic Routes' along R466 from O'Briensbridge to the northwest of Kilbane and along the R463 northwest of O'Briensbridge towards Killaloe. These are detailed in Appendix 5 of the Development Plan as scenic route nos. 26 and 27.

8.2.9. County Limerick is located c. 4km to the southeast of the site. Having regard to the Limerick County Development Plan 2022-2028, the nearest landscape character area, as identified in Table 6.1 and Map 6.1 of the Limerick Landscape Character Assessment, is a protrusion of the LCA 6 Shannon Coastal Zone. The landscape primarily consists of enclosed agricultural land characterised by dominant hedgerows. A specific objective of relevance is objective g), which recommends that in cases where wind farms are permitted, that single lines of equally spaced turbines shall be considered, in order to limit the visual and landscape impact.

8.2.10. County Tipperary is located c. 4km to the east of the site. Having regard to the Tipperary County Development Plan 2022 – 2028, the Tipperary Landscape Character Assessment (Vol.3 Appendix 3) identifies the nearest Landscape Character Type as 'Lakelands' LCA10. In terms of Landscape Sensitivity and Capacity, the Lakelands LCA is identified as 'Class 3, having a high sensitivity to change and limited capacity to accommodate change without detriment. Such landscapes require significant additional care during design and assessment of alternatives to determine how established patterns of use and settlement can be accommodated'.

8.2.11. Appendix 3 of the Wind Energy Guidelines 2006 specifies that 'for blade tips in excess of 100m, a Zone of Theoretical Visibility radius of 20km would be adequate (this is twice conventional thresholds and reflects greater visibility of higher structures)'. The same provisions are set out in Appendix 3 of the Draft Wind Energy Guidelines 2019.

Given that the proposed maximum blade tips are 176.5m, a Zone of Theoretical Visibility radius of 20km therefore applies.

8.2.12. Chapter 15 of the EIAR provides an in-depth landscape and visual impact assessment (LVIA) for the proposed development within a defined 20km study area, which is addressed later in this report. For the benefit of the assessment of this issue, the EIAR offers a comprehensive analysis of the potential landscape and visual effects of the proposed wind farm.

8.2.13. The study area is identified as geographically diverse, featuring elevated regions such as the Slieve Bearnagh and Arra Mountains, significant water bodies like the Shannon corridor and Lough Derg, and varied landscapes including a glacial valley and rolling landforms. The proposed wind farm site is located on the southern slope of Lackareagh Mountain, part of the Slieve Bearnagh Mountains, with the closest point of the River Shannon being 3.4km east. The landscape varies across the study area, transitioning from agricultural land in flatter areas to coniferous forests and moorland in upland regions.

8.2.14. The EIAR includes a Zone of Theoretical Visibility (ZTV) map, revealing that turbine visibility is concentrated in the southern regions, with limited visibility to the north due to taller mountains. Visibility varies around Lough Derg and is influenced by the valley topography southwest of the site, being extensive and consistent to the south towards Limerick and its surroundings. Key visual receptors in the study area include centres of population including Kilbane, Bridgetown, O'Briensbridge, Clonlara, Ballina, Killaloe, Broadford, and Limerick City; tourism, recreational and heritage features around the River Shannon, Parteen Basin, and Lough Derg; and various scenic routes and views. The EIAR examines these in detail, assessing potential visibility from different vantage points. Viewshed Reference Points (VRPs) are identified for landscape and visual impact assessment, with photomontages created from 19 different viewpoints to provide a visual representation of the proposed wind farm within the landscape. The assessment uses a specimen turbine with the highest potential blade tip height (176.5m) and largest potential rotor diameter (138m) for creating ZTV maps and photomontages and compares various turbine dimensions.

8.2.15. Mitigation measures in the EIAR focus on early-stage site selection and design rather than traditional on-site measures, adhering to minimum setback distances to reduce

perceived turbine size. The EIAR examines the residual landscape effects and landscape character, value, and sensitivity, noting the impact on landscape character at both local and broader scales within the study area. This includes analysis of transitional slopes, population density, land use, and scenic values in different parts of the study area.

8.2.16. In terms of landscape impacts, the EIAR discusses the use of existing agricultural and forestry tracks, construction of new internal access tracks, watercourse crossings, crane hard stands, and forestry area felling around the wind farm infrastructure. The construction phase, while involving heavy machinery and materials movement, is considered to have minor effects on landscape character. A 38kV on-site substation compound will be constructed with minimal landscape effects, and all internal site cabling will be underground to minimize land cover disruption.

8.2.17. The EIAR identifies that the construction phase of the wind farm will be visually impactful due to intensive site activity, but this effect is temporary, lasting approximately 12-18 months. Long-term construction effects include turbine foundations, hardstands, access tracks, and a substation, with the latter remaining as part of the national grid post-decommissioning. The report notes that other features will be removed, and the site will be restored after decommissioning, making these impacts largely reversible.

8.2.18. During the operational phase, the EIAR highlights that the most significant landscape impact arises from the introduction of tall turbines with moving parts, which alter the character of the area. However, in the wider study area, especially around the Silvermines Mountains, wind turbines are already a familiar element, mitigating potential landscape character impacts. The EIAR notes that the proposed wind farm integrates well within the landscape due to landform, landscape elements, and land use patterns, contributing to its productive rural character without significant scale conflicts.

8.2.19. The EIAR details that the impact of the development is long-term but reversible, predicting that little evidence of the wind farm will remain 2-3 years post-decommissioning, except for the substation and some access tracks. Decommissioning will mirror the construction phase in terms of temporary impacts.

8.2.20. In its assessment of landscape impact, the EIAR categorises the magnitude within the central study area as Medium and reduces to Low and Negligible beyond 5km from the site. The significance of landscape effects is considered as a balance of landscape sensitivity and impact magnitude, with the residual landscape impact's significance rated as Moderate within the site and its immediate surroundings.

8.2.21. The EIAR's visual impact assessment, detailed in Table 15.7, categorises viewpoints based on distance, sensitivity of visual receptors, and the magnitude and significance of visual impacts. The findings indicate that visual impacts at most Viewshed Reference Points (VRPs) range from moderate-slight to slight, with a general negative long-term outlook, but become negligible or imperceptible at greater distances.

8.2.22. Regarding designated scenic routes, the EIAR finds that the wind farm's visual impacts are generally moderate-slight, adding diversity without significantly detracting from visual amenity. The EIAR also considers the impacts on local community views, determining that the visual impacts are not significant and indicate effective integration of the wind farm within the visual context of the local rural landscape.

8.2.23. The EIAR assesses the impacts on centres of population, major routes, heritage and amenity features, and concludes that the visual impact in these areas is generally low. It also considers the implications of turbine dimension variations, concluding that these variations have negligible impact on the overall visual assessment.

8.2.24. Cumulative impacts are also considered, particularly focusing on visual aspects and landscape character. The EIAR concludes that, while a significant portion of the study area has potential visibility of wind energy developments, the impact varies by location, and the proposed project is not expected to result in significant cumulative impacts.

8.2.25. In conclusion, the EIAR suggests that while the proposed Fahy Beg Wind Farm will result in noticeable landscape and visual changes, particularly within its immediate vicinity, these effects are not considered significant and are expected to diminish rapidly with increased viewing distances and in the broader landscape context. The proposed development is not anticipated to generate significant cumulative impacts with other existing or potential wind energy developments within the study area.

8.2.26. Having considered the extensive documentation, site characteristics, and relevant planning guidelines, and having inspected the location of each of the proposed turbines and ancillary infrastructure and having viewed the site from the surrounding

area, it is my view that the proposed turbine structures, by reason of their height (tip height up to 178m), scale, and siting in this upland rural area, would not adversely impact the character and visual amenity of the surrounding rural landscape. This assessment is grounded in a thorough examination of the site and surrounding area, alongside a detailed analysis of the Environmental Impact Assessment Report (EIAR) and supporting documents, as well as the planning authority's assessment and submissions and observations made in relation to landscape and visual amenity.

8.2.27. I note that the proposed development aligns with the Wind Energy Development Guidelines and the criteria outlined in the Clare Wind Energy Strategy and the Clare County Development Plan 2023-2029. The site's designation as 'Open to Consideration' for wind farm developments underlines its suitability for this type of project. This designation implies a recognition of the potential for wind energy development in the area, balanced against environmental, social, and economic considerations.

8.2.28. Regarding visual impact, I am of the opinion that the proposed turbine structures, while substantial in height and scale, have been sited to minimise visual intrusion. The EIAR's extensive visual impact assessment convincingly shows that the turbines, though visible, would integrate effectively within the upland landscape's character, which already features a blend of natural and man-made elements. The presence of high voltage power lines and pylons in proximity of the site creates a context and assimilate the proposed wind energy development in the landscape.

8.2.29. The EIAR's assessment evaluates the visibility of the turbines from various vantage points, including local residences, scenic routes, and public amenities. It employs techniques such as photomontages and Zone of Theoretical Visibility (ZTV) mapping to realistically depict how the turbines would appear in the landscape. These visualisations demonstrate that, despite their size, the turbines would not be unduly prominent or visually jarring in the landscape.

8.2.30. The turbines' slender profile and the project's overall design have been planned to reduce visual clutter and maintain the landscape's coherence. Their design, characterised by aerodynamic lines and minimalistic appearance, helps in reducing the visual weight of the structures, ensuring they do not appear overly bulky or out of place. This design choice would maintain the visual coherence of the landscape, which

is a blend of natural elements like hills, forests, and man-made features such as agricultural buildings, ESB pylons etc.

8.2.31. The overall layout of the wind farm is acceptable. The turbines and access route are sited to follow the natural contours of the upland landscape, which helps in blending them into the setting. Additionally, the EIAR indicates that the colour and finish of the turbines have been chosen to harmonise with the surrounding environment, further aiding in their visual assimilation. The turbines' colour is expected to blend with the sky and the natural backdrop, reducing contrast and visibility under various weather conditions.

8.2.32. Regarding the scenic qualities and character of the R466 Regional Road, designated as a Scenic Route, I consider that the proposed development would not detrimentally impact these aspects. The turbines, positioned at a respectful distance and designed to align with the land's natural contours, would not diminish the overall visual amenity of the surrounding area or adversely impact the viewer's experience of the landscape. The EIAR's analysis, which includes visual simulations and assessments from various points along the R466, provides a comprehensive view of how the wind farm would be perceived from this scenic route. These assessments show that while the turbines will be visible, their presence is mitigated by distance, design, and the existing visual context, which includes a mix of natural landscapes and man-made structures. The analysis suggests that the turbines would be seen as part of the broader landscape, adding a contemporary element to the rural and natural setting without detracting from its overall beauty and character. Furthermore, the EIAR takes into account the changing perspectives of viewers traveling along the R466. The dynamic nature of views from a moving vehicle means that the turbines will be seen from various angles and distances, intermittently framed by other landscape elements. This transient nature of viewing reduces the potential for the turbines to be an overwhelming presence along the route.

8.2.33. I am of the view that the proposed development does not contravene Objectives CDP14.2 and CDP14.7 as stated in the Clare County Development Plan 2023-2029. These objectives stress the importance of careful siting and design of developments to ensure compatibility with the landscape's character. The proposed wind farm, through its design, siting, and the mitigation measures detailed in the EIAR, adheres to these objectives by ensuring that the development blends with the landscape

character and minimise visual intrusion. The EIAR details various mitigation measures that further ensure the development's compatibility with the landscape. These measures include landscaping interventions, such as planting native species to screen and soften the appearance of the turbine bases and restoring any disturbed land post-construction to its natural state. Such measures demonstrate a commitment to maintaining the integrity of the landscape and mitigating any potential visual impacts.

8.2.34. In conclusion, having considered the Planning Authority's assessment of the proposal, the submissions and observations made regarding landscape and visual amenity, the relevant contents of the EIAR and supporting documents, and the grounds of appeal as submitted by the applicant, and having visited the site and surrounding area, I conclude that the Planning Authority's reason for refusal should not be upheld. The proposed development, in my assessment, represents a well-considered and suitably located renewable energy development that aligns with local and national planning policies and guidelines, and would not cause significant adverse impacts on the landscape character or visual amenity of the area.

8.3. **Impact on Residential Amenity**

8.3.1. The Planning Authority refused permission for the proposed development on the grounds that it is an objective of the Clare County Development Plan, 2023-2029, as set out under Objective CDP11.47(e) to strike an appropriate balance between facilitating renewable and wind energy related development and protecting the residential amenities of neighbouring properties. Having regard to the scale and height of the turbines as proposed, the location of the site in this open landscape, the noise impacts that would be generated from this development and the significant volume of traffic movements required to facilitate the construction process, the Planning Authority consider that the proposed development would seriously injure the amenities of residential property in the vicinity by reason of noise and disturbance. Furthermore, the Planning Authority consider the proposed turbines would be visually overbearing on existing properties and thus depreciate the value of property in the vicinity. The Planning Authority therefore conclude the proposed development would be contrary to Objective CDP11.47 of the Development Plan and contrary to the proper planning and development of the area. The Planning Authority’s assessment of the proposed

development regarding this issue is summarised in Section 3.2.3 above. The Applicant's Grounds of Appeal regarding this issue are set out in Section 6.1.2 above.

8.3.2. Objective CDP11.47 of the Clare County Development Plan, in summary, aims to actively support and assess renewable energy developments in County Clare, balancing environmental protection and technological advancements, while ensuring compliance with national and regional guidelines and promoting the county as a renewable energy leader.

8.3.3. Regarding setback distances, SPPR2 of the Draft Revised Wind Energy Development Guidelines December (2019) mandates a minimum setback of 4 times the wind turbine's tip height, or at least 500 meters, from residential properties for visual amenity, with some flexibility for small-scale, on-site energy generation developments.

8.3.4. The current Wind Energy Development Guidelines (2006) do not specify exact separation distances between wind turbines and dwellings. Instead, the guidelines focus on a more comprehensive approach, considering various factors such as the size of the turbines, local topography, and the existing environment. Notably, they provide specific recommendations for mitigating certain impacts: shadow flicker at neighbouring dwellings should not exceed 30 hours per year or 30 minutes per day when within 500 meters of a turbine (Section 7.14). Additionally, the guidelines indicate that noise impacts are generally not significant if the nearest turbine is more than 500 meters away from any noise-sensitive property (Section 5.6).

8.3.5. The proposed development involves the installation of 8 no. wind turbine generators, each adhering to specific dimensions as detailed in the EIAR. These turbines are of the three-bladed, horizontal-axis type, with varying specifications: tip heights range from 169m to 176.5m, rotor diameters from 131m to 138m, blade lengths (from 65.5m to 69m) and hub heights from 102.5m to 110m.

8.3.6. Considering the setback distances specified in the Draft Revised Wind Energy Development Guidelines from December 2019 (SPPR2), which mandate a setback distance for visual amenity purposes of four times the tip height of the relevant wind turbine with a mandatory minimum of 500 meters from any residential property, alongside the current Wind Energy Development Guidelines (2006) indicating that noise impacts are generally not significant if the nearest turbine is more than 500 meters away from any noise-sensitive property, the proposed development requires a

minimum setback distance of 706m. This requirement is based on the tallest proposed turbine, which has a tip height of 176.5m.

8.3.7. Section 15.3.2.1 of the EIAR states that all of the nearest occupied dwellings are located beyond this distance, with the closest dwelling being 708m away. The EIAR states the proposed layout was designed to achieve an optimal separation distance between the dwellings and the proposed turbines, providing a minimum separation distance of 720m between turbines and the nearest dwellings. The EIAR details that there are 26 no. dwellings located within 1km of the wind turbines. One property within this distance is owned by a landowner involved in the project, who has agreed to a reduced setback distance with the Applicant. On this basis, I conclude that the separation distances between the proposed turbines and residential dwellings generally complies with both the current Wind Energy Guidelines (2006) and the Draft Revised Wind Energy Development Guidelines, ensuring that the project adheres to established standards for minimising impact on neighbouring properties regarding noise and visual impact.

8.3.8. The Planning Authority raised concerns about the noise impacts and the significant volume of traffic movements associated with the construction of the proposed development. The Planning Authority concluded that the development would seriously injure the amenities of nearby residential properties due to noise and disturbance. Notwithstanding the proposed development's compliance with the current Wind Energy Development Guidelines (2006) regarding separation distance from dwellings, I consider it appropriate to assess the noise and disturbance impacts of the proposed development ins entirety to determine impact on the residential amenity of dwellings in proximity to the proposed development.

8.3.9. The EIAR submitted provides a detailed Noise Impact Assessment which is addressed later in this report. For the benefit of the assessment of this this issue, I will summarise the finds of the EIAR.

8.3.10. The EIAR outlines that construction activities at Fahybeg Wind Farm, including turbine erection and substation construction, will generate noise and vibration, with the latter expected to be within human perception thresholds and not causing building damage. Operational noise, mainly from turbine rotation, is designed to minimise disturbance,

with ancillary equipment noise being significantly lower. Blade swish noise varies but reduces with distance and is not significant at typical separation distances.

8.3.11. The prevalence of amplitude modulation (AM) noise is low, and mitigation is in place through blade design and pitch control, although occasional, intermittent occurrences might require long-term measurements for assessment. The EIAR states that infrasound and low-frequency noise from the wind turbines are below perception thresholds and do not pose health risks. Tonal noise from the turbines is typically associated with mechanical faults and is not expected from a normally operating wind farm.

8.3.12. The EIAR methodology for noise and vibration assessment involved predicting noise impacts, and proposing mitigation measures. Existing environment noise levels were established through baseline monitoring at nine locations, with data used to assess potential impacts and derive noise limits for operational noise. These limits comply with standards such as ETSU-R-97 and the Wind Energy Guidelines (2006).

8.3.13. Construction traffic noise is predicted to be low and managed within standard working hours. Construction activities, such as access road preparation and turbine foundation installation, will likely have a slight and temporary impact on noise levels, staying below the 65 dB LAeq,1hr noise limit. Operational noise predictions comply with standards, and any potential impacts will be managed to be within acceptable limits. Decommissioning activities will occur during daytime to minimize noise impact and are expected to be less significant than during the construction phase.

8.3.14. During construction, no significant cumulative impacts are anticipated from the nearby Carrownagowan Wind Farm. For the operational phase, the cumulative noise impact from Carrownagowan is predicted to be negligible on Fahybeg. Predicted cumulative noise levels at most receptor locations comply with day and night limits, with some exceedances noted under specific wind conditions, but actual noise levels are expected to be lower.

8.3.15. The EIAR concludes that construction and decommissioning noise levels will be within acceptable limits, with short-term elevated noise levels possible during grid connection works, which will be mitigated as necessary. Operational noise levels at the nearest receptors comply with both daytime and night-time limits, and mitigation strategies are in place to adjust operational modes if required to meet noise regulations. The

predicted noise levels during operation are managed to remain within acceptable limits, with no significant cumulative impacts expected. The introduction of the wind farm is anticipated to lead to slight to moderate long-term impacts on the closest dwellings, deemed moderate in significance. Decommissioning activities will adhere to relevant guidelines, ensuring noise impacts are managed and kept lower than during construction. Residual impacts of construction and decommissioning are assessed to range from non-significant to slight and temporary, with grid connection works potentially leading to moderate short-term impacts. Overall, the EIAR indicates that with the application of mitigation measures, the proposed development is expected to comply with the relevant noise criteria without significant adverse impacts on the local community.

8.3.16. Having reviewed the Planning Authority report, technical reports, the appellant's grounds of appeal, all submissions and observations, as well as the EIAR and accompanying reports submitted with the application, it is my view that the proposed development would not adversely impact the residential amenity of properties in the vicinity by way of noise and disturbance.

8.3.17. The EIAR, informed by a comprehensive noise impact assessment, presents a robust argument that the noise levels, both during construction and operational phases of the wind farm, will adhere to established guidelines including the Wind Energy Development Guidelines (2006), and will implement best practices to mitigate noise emissions. This is substantiated by the projected compliance with the day and night limits stipulated by the 2006 Wind Energy Development Guidelines, and further reinforced by detailed modelling of noise emissions using the ISO 9613 standard. The proposed turbine models are designed to minimise both aerodynamic and mechanical noise, and the application of modern turbine technology, including variable speed operations and anti-vibration techniques, will further reduce potential noise impacts.

8.3.18. As stated earlier, the setbacks, with the exception of subject to agreement by the owner, are compliant with, or exceed, the recommended guidelines, providing a buffer that exceeds the minimum required for visual and noise considerations. These have been calculated based on the maximum height of the turbines, thereby ensuring a conservative and protective approach towards noise management.

8.3.19. I am of the view that the EIAR provides a thorough analysis of the predicted noise environment. This analysis includes a wide range of variables, ensuring that the predicted noise levels are not underestimated. The operational noise predictions take into account the worst-case scenarios with conservative assumptions, such as disregarding any potential topographic and forestry attenuation that could further reduce noise levels.

8.3.20. I also note the applicant's chosen turbine models, which are designed with advanced technology to reduce both aerodynamic and mechanical noise. The adoption of modern turbine features, such as variable speed operations and improved anti-vibration systems, will be significant in mitigating noise. This is particularly relevant given the planning authority's concerns regarding noise impacts, which the EIAR addresses through specific mitigation measures, including real-time operational adjustments and careful planning of construction activities to minimise noise disturbances during sensitive periods. Moreover, the EIAR commits to conducting post-construction noise surveys to verify compliance with the established noise limits and to implement noise-reduced operational modes if required. This commitment to ongoing monitoring and adjustment post-construction is indicative of a proactive and responsive approach to noise management, aiming to ensure that the residential amenity is preserved. Such measures can be enforced by way of condition in the event of a grant of permission.

8.3.21. In terms of construction-phase noise, the EIAR outlines a clear set of strategies to manage and mitigate the impact of construction traffic and activities. Planned measures include the use of noise barriers and strategic scheduling of high-impact works during less sensitive times. Additionally, the EIAR's construction traffic management plan seeks to reduce potential noise and disturbance through careful routing and timing of deliveries and other heavy goods vehicle movements.

8.3.22. In conclusion, I am satisfied that the proposed development has been designed to strike an appropriate balance, as mandated by Objective CDP11.47(e) of the Clare County Development Plan 2023-2029, between facilitating renewable wind energy development and safeguarding the residential amenities of properties in the vicinity. The mitigation measures detailed in the EIAR, supported by comprehensive technical assessments and predictive noise modelling, establish that the operation of the turbines, considering their scale and height, will not significantly impact the local

soundscape or result in undue noise disturbances. Moreover, the siting of the turbines, adherence to required setback distances, and the application of contemporary turbine technology would mitigate visual impact and preserve the visual amenity of the area. The EIAR addresses the potential for noise during the construction phase and commits to managing and minimising traffic movements to alleviate any temporary disturbances. The design of the project, which considers the characteristics of the open landscape, ensures that the turbines, while noticeable, will not be visually overbearing. Additionally, there is no substantive evidence presented that would conclusively indicate a depreciation in property values directly attributable to the wind farm's presence at this particular location. I conclude, therefore, that the proposed development, would not contravene Objective CDP11.47 of the Clare County Development Plan 2023-2029 and should not be refused permission on grounds pertaining to impact on residential amenities of dwellings in the surrounding area.

9.0 Environmental Impact Assessment (EIA)

9.1. Introduction

9.1.1. This application was submitted after the 1st September 2018, the date that Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment was transposed into Irish legislation as part of the provisions of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018). These Regulations transpose the requirements of the EIA Directive into planning law, providing a clear definition of EIA, further clarity regarding the process and the need to identify, describe and assess the direct and indirect significant effects of the project on specified environmental factors. The Minister for Housing, Planning and Local Government has published updated 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out environmental impact assessments (EIA)' (2018), replacing the 2013 Guidelines. The new legislation did not make any changes to Annex I or II of Directive 2011/92/EU, which identifies projects for the purposes of EIA. Therefore, Schedule 5 of the Planning and Development Regulations 2001 (as

amended), for the purposes of EIA, still applies. The stated estimated Export Capacity (MEC) of the development is expected to be between 31.2 – 38.4 MW.

9.1.2. The proposed development comprises the construction of eight wind turbines with tip heights ranging from 169m to 176.5m, hub heights between 102.5m and 110m, and rotor diameters from 131m to 138m. The project includes an underground grid connection cable to the national grid, temporary accommodations for turbine component delivery, and the erection of a 100m high permanent meteorological mast. A 38kV electrical substation and associated infrastructure including underground cabling, turbine foundations, site tracks, and drainage will be developed. Access improvements will be made to local roads, with new and upgraded watercourse crossings, two temporary construction compounds, and necessary tree felling. The grid connection will involve horizontal directional drilling for watercourse crossings and the installation of pre-cast joint bays within specified townlands. Additional temporary works will facilitate turbine component delivery on the R466. The application requests a ten-year planning permission and a 35-year operational lifespan post-commissioning. The application is supported by an Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS).

9.1.3. Part 1 of Schedule 5 of the Planning and Development Regulations 2001 (as amended) sets out projects which require EIA if the stated threshold set thereunder has been met or exceeded or where no thresholds are set. The proposed development does not fall within a category of development set out in Schedule 5 Part 1 of the Planning and Development Regulations 2001 (as amended).

9.1.4. Part 2 of Schedule 5 of the Planning and Development Regulations, 2001 (as amended) sets out development for the purposes of Part 10 of the Planning and Development Act 2000 (as amended) and includes “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.” The proposed 8 turbine windfarm with potential installed capacity of c. 60-70 MW is therefore a prescribed class of development for the purposes of EIA.

9.1.5. The application is accompanied by an Environmental Impact Assessment Report (EIAR) which was prepared by Fehily Timoney Consultants on behalf of the applicant, RWE Renewables.

9.2. Compliance with legislation

9.2.1. The EIAR addresses the development across three volumes, including Volume I: Non-Technical Summary; Volume II: Environmental Impact Assessment Report; and Volume III: Appendices.

9.2.2. The Non-Technical Summary includes a description of the site and proposed development, an outline of the EIAR structure, the requested permission period (ten years), the need for the proposed development, alternatives considered, an outline of relevant policy and legislation and EIA scoping and consultation. The Non-Technical Summary also describes likely significant effects, mitigation measures, monitoring measures, and the methods used for the assessment, including an explanation of any difficulties encountered during the analysis (none). I am satisfied that the Non-Technical Summary is concise, comprehensive and written in language easily understood.

9.2.3. Article 5(3)(a) of the Directive states that the EIAR must be prepared by competent experts. Appendix 1.1 provides a curricular vitae of the competent experts who contributed to the preparation of the EIAR, including details of their qualifications and experience. I am satisfied that the EIAR has been prepared by qualified and competent experts.

9.2.4. Schedule 6 of the Planning and Development Regulations 2001 (as amended) describes the information to be contained in an EIAR. Volume II of the EIAR contains the main text body and is divided into 17 chapters. Chapters 1 and 2 include an overall introduction and the need for the proposed development and alternatives considered. Chapter 3 sets out a description of the proposed development. Chapter 4 sets out relevant planning policy, the relevance of the proposed development to these policies and reference to the EU Habitats Directive, EU Directive on the Promotion of the Use of Energy, the EU Emissions Trading System Directive (EU ETS) and the recast Renewable Energy Directive. Chapter 5 describes the EIA scoping, consultation and key issues.

9.2.5. Chapters 6 to 17 set out an examination of the effects of the proposal on the environment under the following headings: (6) Air Quality & Climate, (7) Noise and Vibration, (8) Biodiversity, (9) Land, Soil, Geology and Hydrogeology, (10) Hydrology and Water Quality, (11) Population, Human Health & Materiel Assets, (12) Shadow

Flicker, (13) Traffic and Transportation, (14) Archaeology, Architectural and Cultural Heritage, (15) Landscape & Visual Impact, (16) Telecommunications and Aviation and (17) Interactions of the Foregoing.

9.2.6. Each chapter describes the receiving environment, potential impacts from the development, mitigation measures and an assessment of the potential impacts from the proposed development and mitigation measures. Volume III: Appendices include all supporting documentation and references referred to in the EIA text body in Volume II.

9.2.7. I am satisfied that the EIAR has been prepared by competent experts, is complete and of acceptable quality, and that the information contained in the EIAR and supplementary information provided by the developer, adequately identifies and describes the direct and indirect effects of the proposed development on the environment and complies with Article 94 of the Planning and Development Regulations 2001 (as amended). I am satisfied that the information provided is reasonable, up to date and sufficient to allow the Board to reach a reasoned conclusion on the significant effects of the proposed development on the environment, taking into account current knowledge and methods of assessment.

9.3. Reasonable Alternatives

9.3.1. See Article 5(1)(d) of Directive requires that the information provided by the developer in an EIAR shall include a description of the reasonable alternatives studied by the developer. These are reasonable alternatives which are relevant to the project and its specific characteristics. The developer must also indicate the main reasons for the option chosen, taking into account the effects of the project on the environment.

9.3.2. Chapter 2 of the EIAR describes the need for the proposed development, site selection and alternatives considered. The EIAR examines the necessity for renewable energy against the "Do-Nothing" scenario for the proposed project, which would see Ireland miss EU targets and incur penalties, as well as forfeit socio-economic benefits like job creation and community funds. A multi-disciplinary team conducted a rigorous site selection, considering environmental, demographic, and infrastructural criteria, ultimately identifying the Fahybeg site as optimal due to its strong wind resource,

compliance with energy strategies, absence of Natura 2000 sites, low population density, and accessibility to the national grid.

9.3.3. The EIAR underscores the alignment of the project with national guidelines and the importance of iterative design to minimise environmental effects. Special attention was paid to avoiding Natura 2000 sites, assessing local population density, and ensuring feasible transportation for construction. The project underwent several design iterations, with the final layout chosen for its balance of efficiency and environmental consideration, including measures like turbine control software to mitigate shadow flicker.

9.3.4. The proposed grid connection to the Ardnacrusha 110kV Substation was rigorously evaluated for environmental impacts, with a 38kV connection route selected based on a study considering various technical and environmental constraints. Delivery routes for turbine components were determined with an emphasis on minimising local infrastructure impact. Alternative on-site substation locations were evaluated, with the quarry site selected for its suitability and existing screening.

9.3.5. Operational life was assessed, with a 35-year period deemed optimal for maximising carbon savings and contributing to renewable electricity supply, compared to a 30-year scenario. The EIAR includes a comparative analysis of potential residual environmental impacts for both operational life spans, emphasising the project's contribution to renewable energy goals and its strategic site selection and design processes that address multiple environmental and technical factors.

9.3.6. In consideration of the information presented, it is my view that the EIAR has adequately considered reasonable alternatives relevant to the project. The document details various options for the site selection, turbine layouts, operational life, and grid connection routes. These alternatives have been evaluated not only on their environmental impact but also in terms of feasibility, technical constraints, and compliance with environmental guidelines and policies. Such consideration demonstrates a robust approach to selecting the most suitable option for each aspect of the project.

9.3.7. I am satisfied that the level of detail within the EIAR is reasonable and sufficient. The report provides in-depth analyses, including comparative tables and figures, which clearly outline the potential environmental impacts of each alternative considered. This

level of detail facilitates a comprehensive understanding of the decision-making process and the rationale behind the chosen options. The process adopted in the EIAR appears robust. The report reflects a methodical approach, starting from initial site screening to final design iterations. Each step is substantiated with environmental, technical, and logistical considerations. The inclusion of mitigation strategies and their impact on the decision-making process further strengthens the robustness of the EIAR. In reviewing the alternatives considered, I am satisfied that the requirements of the 2014 EIA Directive have been fully complied with. The Directive emphasises the need for an in-depth study of the environmental impact, including the consideration of reasonable alternatives. The EIAR not only identifies these alternatives but also justifies the selections made with a clear focus on minimising environmental impact and maximising efficiency. The information contained in the EIAR regarding alternatives provides an adequate justification for the choices made concerning the site, layout, construction methodology, and grid connection route. Each choice is backed by a detailed analysis of the environmental impacts, technical feasibility, and compliance with relevant guidelines and policies. I conclude therefore that the EIAR for the proposed development sufficiently evaluates various alternatives, justifies the preferred choices, and aligns with the requirements of the 2014 EIA Directive.

9.4. Air and Climate

9.4.1. Chapter 6 of the EIAR details anticipated air and climate impacts across construction, operation, and decommissioning phases. The report details how the wind farm, by nature, would emit no direct emissions, hence favorably contrasting with fossil-fuel stations, and supports Ireland's renewable energy and greenhouse gas reduction goals. Though construction will briefly produce vehicle emissions and dust, it is not expected to have any lasting negative effects on climate change.

9.4.2. The report details how the site was strategically chosen due to its minimal peat content, reducing potential CO2 release from disturbed peatlands. Calculations using the Scottish Windfarm Carbon Assessment Tool project substantial CO2 savings over the wind farm's 35-year lifespan, far outweighing emissions from construction and operation. Air quality in the vicinity is good, aligning with EU zones, and baseline conditions reflect no concerns necessitating air quality sampling.

9.4.3. The EIAR's assessment method employs existing EPA data and NRA guidelines to evaluate construction dust emissions. Operational emissions are negligible except for occasional backup generator use, while decommissioning mirrors construction impacts but on a lesser scale. Cumulative impacts from nearby projects are considered insignificant, with the proposed wind farm's operation marked by a significant, positive long-term impact on air quality and climate. Mitigation strategies during construction include dust suppression and vehicle emission controls, as outlined in the CEMP. No additional mitigation is deemed necessary during operation due to the project's positive influence on air quality.

9.4.4. The EIAR concludes that the project will not significantly affect air quality or climate, reinforcing the wind farm's role in bolstering renewable energy supply and aiding Ireland in achieving its climate targets, with no substantial cumulative impacts foreseen from other projects.

9.4.5. Having regard to Section 6 of the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) alongside the detailed summary of the EIAR above regarding air and climate, it is my view that the proposed development would not have adverse impacts on the environment, particularly concerning air quality and climate. The EIAR demonstrates a comprehensive assessment of potential direct and indirect effects on air quality and climate throughout all phases of the project, from construction to decommissioning. The report takes into account relevant environmental factors, including emissions, dust generation, and carbon emissions, ensuring a comprehensive evaluation of the project's impact.

9.4.6. The assessment of air quality highlights that, while minor temporary emissions are anticipated during construction, the project's operational phase is expected to have minimal air quality impacts, with a positive long-term residual impact due to the reduction of fossil fuel dependency. It is evident that the mitigation measures outlined in the report, such as dust control plans, construction guidelines, and vehicle emission controls, are robust and designed to minimise any potential short-term impacts. Furthermore, the project's contribution to reducing carbon emissions and its alignment with Ireland's commitment to increasing renewable energy production are substantial factors. The detailed analysis of carbon emissions and their mitigation through the

wind farm's operation reinforces the positive environmental impact this development would have.

9.4.7. In terms of cumulative effects, the EIAR thoroughly evaluates the potential interactions between this project and other developments within a 20km radius, ensuring that the combined impact on air quality and climate remains within acceptable limits. The assessment reasonably concludes that the cumulative effects of multiple renewable energy generation projects would result in reduced carbon emissions and improved air quality.

9.4.8. In conclusion, I am of the opinion that the proposed wind farm development aligns with both European and national objectives for reducing greenhouse gas emissions, improving air quality, and increasing renewable energy production. The project's mitigation measures and cumulative effects assessment further support the conclusion that it is unlikely to have significant adverse impacts on air quality and climate.

9.5. Noise and Vibration

9.5.1. Chapter 7 of the EIAR outlines the expected noise and vibration from construction, noting activities like building turbine foundations and excavation will generate noise, with additional noise from vehicles delivering materials. Vibration, resulting from rock breaking and heavy traffic, is measured with human perception thresholds at 0.14mm/s to 0.3mm/s, and compared to BS 5228 building damage guidelines of 15mm/s at 4Hz to 50mm/s at 40Hz. Reported construction vibrations, such as 0.8 mm/s from excavators at 4m and 0.7 mm/s from breakers at 10m, are below these thresholds. Due to the distance of noise-sensitive locations, these vibrations are not expected to impact residents or buildings, rendering construction vibration a non-issue.

9.5.2. The EIAR indicates operational noise from wind turbines arises mainly from wind turbines at wind speeds of 3 to 25 m/s, with aerodynamic and mechanical sources being the primary contributors. The noise from blades is designed to be minimal, and noise from ancillary equipment like substation transformers is lower and not a concern unless close to residential areas. Blade Swish noise varies by up to 3 dB(A), or 6 dB(A) in specific conditions, and decreases with distance from the turbines.

9.5.3. Amplitude Modulation (AM), especially Other AM (OAM), is characterised by low-frequency sounds and is rare, occurring in a minor fraction of wind farms. Strategies to mitigate OAM include blade design and pitch control. The EIAR notes that there is no definitive method to predict OAM before operation, but the Institute of Acoustics (IoA) provides a 'Reference Method' for assessing and managing AM during operation.

9.5.4. The EIAR details that low frequency noise from Fahybeg Wind Farm's turbines falls in the 10 Hz to 160 Hz range, with infrasound below 20 Hz. The report emphasises that such noise levels are not problematic, referencing studies including those from the UK Department of Trade and Industry and the World Health Organisation, which confirm infrasound emissions are below perceptible levels and do not cause health issues. The EIAR notes that turbine-generated low frequency noise is below DEFRA's and Danish standards, being lesser than traffic noise.

9.5.5. The EIAR describes tonal noise as identified by ETSU-R-97, resulting from specific mechanical conditions and linked to turbine model specifics. However, it points out that operational turbines typically do not produce significant tonal noise, with a tonal penalty assumed to be 0 dB for the assessment, indicating a negligible impact on the environment from this source.

9.5.6. The EIAR details the methodology for noise and vibration assessment at the proposed development, involving a review of guidance documents including EPA's guidelines, ISO 9613-2: 1996, and BS 5228 Part 1:2009+A1:2014. The process includes specifying criteria, characterising the noise environment, predicting and evaluating impacts, proposing mitigation, and assessing residual impacts, informed by consultations with local authorities and residents.

9.5.7. The EIAR describes establishing baseline noise levels by monitoring at nine different locations to reflect varying noise environments around the site. This data was analysed, discarding anomalies due to equipment or environmental factors, to ensure accurate representation of the noise environment across necessary wind speeds, with findings detailed in Appendix 7.1 of the EIAR.

9.5.8. The EIAR specifies prevailing daytime and night-time noise levels at the development's monitoring sites in Tables 7.4 and 7.5. These levels, measured as LA90,10min, provide a baseline for assessing the wind farm's potential noise impact. The EIAR describes a methodology to set noise limits, adhering to the Institute of

Acoustics' Good Practice Guide, involving background noise measurement at varied locations around the site, with the same limits applied to nearby Noise Sensitive Locations (NSLs).

9.5.9. The EIAR notes that operational noise criteria follow best practices in acoustics, incorporating the Wind Energy Guidelines (2006), ETSU-R-97, and the IoA Good Practice Guide, suggesting a night-time noise limit of 43 dB LA90 and a daytime limit of 35 to 40 dB LA90 for areas with low noise levels. It details that fixed limits are based on the number of nearby dwellings, the impact on power output, and exposure duration. With 41 noise-sensitive locations identified, a 40 dB LA90 limit is deemed appropriate.

9.5.10. The EIAR details that construction traffic at Fahybeg Wind Farm will peak during morning and evening hours due to contractors' commutes, but this is not expected to be a continuous noise source throughout the day, with low overall noise impact. Traffic noise mitigation includes limiting movement to standard working hours and excluding Sundays unless otherwise agreed. For specific tasks such as turbine erection or concrete pours, extended hours may occasionally be necessary, with potential night deliveries coordinated to minimize disturbance.

9.5.11. The EIAR describes activities related to access road preparation, hardstands, and drainage, predicting a slight and temporary noise impact, with cumulative noise levels at the nearest dwelling (R67) expected to be 52.1 dB LAeq,1hr—below the 65 dB LAeq,1hr threshold. Machinery use and their associated noise contributions are listed in Table 7.7.

9.5.12. For wind turbine foundation preparation, the EIAR notes various construction activities with noise levels anticipated at 56.5 dB LAeq,1hr for the closest dwelling (R13), also below the 65 dB threshold, indicating minor and temporary impact.

9.5.13. During wind turbine installation, the EIAR assumes a worst-case scenario with two cranes operating 80% of the time, resulting in a cumulative noise level of 56.2 dB LAeq,1hr at receptor R13, which remains within acceptable limits. Hence, noise impact from turbine installation is also expected to be minor and short-lived.

9.5.14. The EIAR describes the construction noise impacts from two proposed substation buildings at Fahybeg Wind Farm, detailing various construction phases and machinery use. It notes the closest occupied dwelling will experience a maximum noise level of

55.2 dB LAeq,1hr, which is below the threshold of 65 dB LAeq,1hr. This impact is characterised as slight and temporary.

9.5.15. For grid connection works, the EIAR details six months of construction for an onsite substation, which will include 'rolling road closures' to reduce resident impact, with Table 7.11 showing predicted noise levels at various distances. While some activities may briefly exceed the 65 dB noise limit, these are expected to be short-lived and only affect a few residences, with temporary barriers or screens used as mitigation, leading to a significant but temporary noise impact.

9.5.16. Operational noise predictions, according to the EIAR, follow the ISO 9613 standard and consider several attenuation factors without including topography or forestry, a conservative approach. Barrier attenuation is limited to a 2 dB reduction as per IoA GPG, and overall, operational noise levels are expected to be within acceptable standards.

9.5.17. The EIAR outlines operational noise predictions for Fahybeg Wind Farm using the ISO 9613 standard, focusing on a worst-case scenario with wind blowing towards houses, at least 711 meters from the nearest turbine. It details the noise modelling for Nordex 133/4.8 turbines, considering hub heights of 110m and 102.5m, and notes the minimal effect of hub height variation on noise levels.

9.5.18. Predicted noise at sensitive receptors, including within a 35 dB LA90 contour, complies with noise limits for day and night. The EIAR describes proposed mitigation measures to ensure compliance, even when factoring in cumulative noise from nearby wind farms.

9.5.19. The EIAR discusses the decommissioning phase, indicating that above-ground turbine components will be dismantled and recycled, with turbine foundations left to re-vegetate and internal access tracks remaining. Grid infrastructure will become a permanent part of the national grid. Decommissioning will be conducted in daytime to minimise noise, following relevant guidelines.

9.5.20. The EIAR indicates no significant cumulative impacts during construction with the nearby Carrownagowan Wind Farm, due to the distance and work nature, suggesting minimal interaction between the developments. The EIAR details that the operational noise impact from the nearby Carrownagowan Wind Farm, with its 19 turbines, on Fahybeg Wind Farm will be negligible, as Carrownagowan's noise levels are predicted

to be more than 10 dB lower. It notes that cumulative noise levels at 16 receptors near Fahybeg meet day and night limits, with potential exceedances at specific receptors like R13 under certain wind conditions described as worst-case scenarios.

9.5.21. For construction, the EIAR describes noise levels from site activities at Fahybeg as below BS 5228-1:2009+A1:2014 limits, with mitigation measures such as restricted working hours, managed night-time deliveries, community consultation, adherence to the CEMP, and maintenance of equipment to minimize noise. It notes that any elevated noise levels during grid connection works will be addressed with temporary noise barriers or screens.

9.5.22. Operational noise levels at Fahybeg are expected to comply with limits, negating the need for additional measures. However, the EIAR acknowledges a new noise source for receptors close to the wind farm, with long-term impact ranging from slight to moderate. Post-construction operational noise surveys will be conducted, and if exceedances are found, turbines may operate at reduced speeds, albeit with reduced power output, to ensure compliance with noise regulations.

9.5.23. The EIAR details that decommissioning noise impacts will be minimised by adhering to standard working hours and avoiding Sundays unless approved. Activities will comply with relevant policies and are planned within set hours to ensure noise is managed within acceptable limits, lower than during construction.

9.5.24. It notes that for phases exceeding one month, on-site noise won't surpass 65 dB LAeq,1hr at residential dwellings, resulting in non-significant to slight, temporary residual impacts. Noise from grid connection works may cause temporary significant impacts, with mitigation measures in place to moderate these effects.

9.5.25. Operationally, the EIAR describes noise levels as compliant with day and night limits set by the Wind Energy Development Guidelines 2006, leading to non-significant cumulative impacts. However, new noise sources near some receptors may cause slight to moderate long-term impacts, with moderate significance for the closest dwellings.

9.5.26. As detailed in Section 3.1 above, the Planning Authority refused permission for the proposed development on the grounds that the noise impacts generated from the proposed development and the significant volume of traffic movements required to facilitate the construction process, would seriously injure the amenities of residential

property in the vicinity by reason of noise and disturbance. I have addressed this issue in Section 9.3 above. I note and have taken into consideration the concerns raised by the Council's commissioned Environmental Assessment Officer, as detailed in Section 3.3.1 above. I have also taken into consideration the issues and concerns raised in the observations received, as detailed in Section 6.3 above.

9.5.27. In evaluating the EIAR, it is my view that the report has taken a methodical approach to assessing potential noise emissions. The EIAR has based its assessment in established standards such as British Standard 5228:2009+A1:2014 and the UK Institute of Acoustics' guidelines, which are frameworks for such evaluations, as acknowledged by the Association of Acoustic Consultants of Ireland website.

9.5.28. The EIAR addresses the phenomenon of noise at varying wind speeds, particularly emphasising the noise generation between the cut-in and cut-out speeds, which reflects an understanding of the operational range of the turbines. I note the concerns raised by Burke Environmental Services, Clare County Councils' Commissioned Environmental Assessment Officer, that the EIAR focuses on wind speeds between 3-12 m/s with cut-out wind speed to be approximately 25 m/s. The EIAR's omission of a detailed assessment between 12-25 m/sec could be seen as a gap; however, considering the Wind Energy Development Guidelines' (2006) indication that turbine noise increases at a slower rate than wind-generated background noise, this omission might not significantly impact the overall noise assessment. This is consistent with the Draft Wind Energy Guidelines (2019) which state that natural wind sound increases continuously with increasing wind speed, whereas wind turbine noise from modern pitch regulated turbines reaches a plateau at rated (full) power and that in some cases the wind turbine noise is at or below the natural (background) sound levels. This suggests that at higher wind speeds, the ambient noise, which tends to increase more rapidly, will likely mask turbine noise, thus potentially reducing the relative impact, especially in the context of the cut-out speed where the turbines would not be functional. Notwithstanding this, should the Board be of the opinion that further information is necessary for the purposes of determining the noise impact of the proposed turbines at wind speeds of between 12-25 m/sec, the Board at its discretion under Section 132(1) of the Planning and Development Act 2000 (as amended) may seek further information from the applicant addressing this issue.

9.5.29. Considering the phenomenon of Other Amplitude Modulation (OAM), the EIAR acknowledges the complexity of predicting OAM but does not provide a specific observation distance. I am of the opinion that while a quantification of the potential observation distance would be beneficial, the rarity of OAM occurrences, as noted from studies, may not necessitate a detailed assessment in this instance. However, further clarification in the EIAR could strengthen the assessment.

9.5.30. I acknowledge the Council's and observers concerns regarding the actual experience of noise in low baseline areas at night. I observe that the EIAR employs a prescriptive night-time noise limit of 43 dB, which could be deemed conservative given the low baseline night-time noise levels in rural settings. Notwithstanding this, the noise limit prescribed aligns with the Wind Energy Development Guidelines' (2006) which states that 'during the night the protection of external amenity becomes less important, and the emphasis should be on preventing sleep disturbance. A fixed limit of 43dB(A) will protect sleep inside properties during the night'. However, it is important to consider that the perception of noise can be subjective, and even if the predicted noise levels comply with the guidelines, they may still be noticeable against a low ambient background. Therefore, I consider that while the EIAR's approach aligns with standard practices, a more detailed assessment of the potential perceptual difference in night-time noise levels at wind speeds up to 25 m/s would enhance the robustness of the report. The Board, at its discretion, may wish to seek further information on this matter.

9.5.31. Regarding noise from HGV movements during construction, the EIAR presents annual average data but suggests a higher concentration of movements during the initial construction phase. I consider that the EIAR could be bolstered by including a more detailed assessment of the potential local impacts associated with this concentrated period of activity. However, I acknowledge the noise control measures outlined in Section 4.3.2 of the Construction Environmental Management Plan (CEMP), as documented in Appendix 3.1 of the EIAR. In summary, these noise control measures encompass a range of strategies. Construction work traffic movements along access routes will be restricted to standard working hours, excluding Sundays and public holidays unless otherwise agreed. Measures will be taken to ensure that vehicles on local roads do not wait outside residential properties with their engines idling during turbine deliveries. Consultation with the local community will involve advance communication planned for any activities likely to occur outside of normal working

hours. The construction process will be undertaken in collaboration with the local authority, and residents will be informed of construction activities through a Community Liaison Officer. Construction works on site will adhere to the guidance set out in BS 5228:2009+A1:2014. Proper maintenance of plant will be enforced to minimise noise generated by site operations, and all vehicles and mechanical plant will be equipped with effective exhaust silencers. Machinery that is used intermittently will be either shut down or throttled back to a minimum during periods when not in use. The specified hours of construction activity will be strictly followed to ensure compliance. It is anticipated that on-site construction noise levels will remain below the relevant noise limit of 65 dB LAeq,1hr for operations exceeding one month. In cases where temporary elevated noise levels are anticipated due to grid connection works, measures will be taken to limit the impact. This includes the use of temporary barriers or screens to reduce noise levels where required and minimising noise impact by limiting the number of plant items operating simultaneously whenever feasible. I consider that these noise control measures would mitigate potential noise impacts from the proposed project and ensure compliance with noise limits and regulations.

9.5.32. I acknowledge the concerns raised by the HSE – Environmental Health Service, as detailed in Section 3.4.2 above. However, it is important to consider how the EIAR aligns with the Wind Energy Development Guidelines (2006) with respect to noise. The EIAR provides a comprehensive analysis of noise sources, considering both aerodynamic and mechanical aspects as stipulated by the Guidelines. The EIAR details the implementation of variable speed operations, which are in line with the Guidelines' recommendations for good acoustical design and careful siting of turbines to prevent significant increases in ambient noise levels at noise-sensitive locations.

9.5.33. The EIAR’s approach to operational noise, particularly in addressing the balance between power generation and noise impact, adheres to the 2006 Guidelines. It employs ETSU-R-97's recommendations, taking into account the number of dwellings in the vicinity of the wind farm and the associated noise impacts, which corresponds with the Guidelines' emphasis on assessing noise impact relative to the nature and character of noise-sensitive locations. Furthermore, the EIAR adopts noise limits that reflect the variation in both turbine source noise and background noise with wind speed, as directed by the Guidelines. By setting daytime noise levels within the range of 35-40 dB(A) in areas where background noise is less than 30 dB(A), and a fixed

night-time limit of 43dB(A), the EIAR is consistent with the Guidelines' provisions to protect sleep inside properties during the night and to accommodate for the lower importance of protecting external amenity during these hours.

9.5.34. While the EHS raises valid points regarding the potential for statutory nuisance and the importance of assessing and communicating the implications of predicted noise against lower health protection standards, these concerns can be addressed through the planning conditions.

9.5.35. In terms of operational noise, the EIAR's method of reporting and assessing noise impacts is consistent with the Guidelines. However, to address the EHS's concerns, additional conditions could be considered to ensure ongoing compliance with the established noise limits, such as requiring periodic noise monitoring and implementing adaptive management strategies if noise levels approach the upper limits of the Guidelines' recommendations. This could include the adjustment of turbine operations or additional mitigation measures to manage any potential exceedances.

9.5.36. In consideration of the above, I am satisfied that the concerns raised, while appreciable, have been adequately addressed and mitigated by the proposed development's careful design and operational planning, as evidenced in the EIAR. Any outstanding issues can be effectively managed through the imposition of appropriate conditions to ensure the project's operation does not result in significant adverse effects on the environment or public health. I conclude, therefore, that the proposed development complies with the requirements of the current Wind Energy Development Guidelines (2006) and the proposed development would not have significant effect on the environment, with regards noise and vibration.

9.6. **Biodiversity**

9.6.1. Chapter 8 of the EIAR provides a thorough assessment of potential impacts on biodiversity, flora, and fauna during the construction, operation, and decommissioning of the proposed Wind Farm.

9.6.2. The EIAR provides details of engagement with various prescribed bodies to address concerns related to biodiversity, habitat management, and species protection. It integrates guidance from the NPWS on biodiversity strategy adherence and from IFI

on watercourse protection and silt management, while also respecting the Wildlife Act's provisions on nesting seasons.

9.6.3. The EIAR includes a desktop study assessing impacts on nature conservation sites and local biodiversity within 15km of the site, using GIS to pinpoint relevant areas and preparing a Natura Impact Statement for European sites. It reviews data on sensitive species, employing authoritative texts and various databases for a comprehensive evaluation. Desk reviews inform survey scopes for bats and other species, respecting the protective measures required for candidate SACs under the Habitats Directive. Field studies define specific survey areas for habitats, flora, fauna, and aquatic ecology around the wind farm and associated routes, employing buffers of up to 5km for thorough ecological assessments.

9.6.4. The EIAR conducts surveys to evaluate the ecological impact of the proposed wind farm, including habitat assessments using the Guide to Habitats in Ireland and GIS mapping. Comprehensive mammal, bat, and avifauna studies follow best practice guidelines, with additional measures like trail cameras and bat detectors to monitor wildlife activity. The analysis of habitats, species, and ecological features adheres to NRA and EPA guidelines, assessing effects based on various criteria such as significance and duration. Surveys extend beyond the site to include aquatic ecosystems and rare species, employing methods from electric fishing to kick-sampling to understand the biological water quality and habitat value. The evaluation of potential impacts is thorough, considering direct, indirect, and cumulative effects, with a focus on populations and trends, especially for sensitive avifauna species. This robust approach, detailed in multiple appendices of the report, ensures the development's compliance with environmental standards and the careful management of its ecological footprint.

9.6.5. **Existing Environment**

9.6.6. The EIAR describes the existing ecological conditions and potential impacts on biodiversity within a 15 km Zone of Influence, including includes three Special Areas of Conservation (SACs) and four Special Protection Areas (SPAs), one Natural Heritage Area (NHA), and eight proposed NHAs but no nature reserves or RAMSAR sites.

9.6.7. Twelve invasive plant species have been identified within the area, with mitigation measures suggested for those found along the grid connection route and turbine delivery route. The site itself, which spans a diverse array of habitats such as woodlands and grasslands, does not host flora listed on the Flora Protection Order or the Irish Red List, but does include the bee orchid, a species of conservation concern.

9.6.8. Terrestrial mammals including badgers, red squirrels, and otters are noted within the vicinity, with field surveys pinpointing seven species directly at the proposed site. For bats, the EIAR has recorded significant roosting and foraging activity, especially for common pipistrelles and Daubenton's bats. Detailed avifauna studies reveal no substantial populations of wintering waterbirds within the immediate area, but the potential exists along the River Shannon. Breeding bird surveys have not indicated any Annex I species, but several raptors have been observed which may breed within the area.

9.6.9. Aquatic ecology surveys underscore "Good" biological water quality in local rivers, with no evidence of white-clawed crayfish but a presence of salmonids and lamprey. The marsh fritillary butterfly, although historically recorded near the site, is not currently found in areas where construction would occur, suggesting minimal impact on this species.

9.6.9.1. *Do Nothing Scenario*

9.6.10. The EIAR indicates that if the proposed development does not proceed, the 'Do Nothing' scenario suggests that the existing environment and key receptors will likely remain unchanged, assuming ongoing agricultural activities but excluding forestry operations.

9.6.11. Potential Impacts on Ecology

9.6.11.1. *Potential effects during the construction phase of the Project*

9.6.12. The EIAR describes how the proposed wind farm and its associated infrastructure, while located proximate to several Special Areas of Conservation (SACs) and a Special Protection Area (SPA), will not impinge directly upon them during construction. It affirms, through an Appropriate Assessment Screening Report and Natura Impact Statement, the project's compliance with the Habitats Directive and its negligible

impact on the integrity of European sites, both individually and cumulatively. Furthermore, the EIAR illustrates that nearby Natural Heritage Areas (NHAs) and proposed NHAs will not be significantly affected, with any indirect effects such as water quality changes being minor, temporary, and reversible.

9.6.13. Regarding habitats and flora, the EIAR specifies that habitat losses will ensue, differentially impacting key and non-key ecological receptors, with losses quantified in both hectares and percentages. Notably, a 27% loss of non-key spoil and bare ground and a 21% loss of key recolonising bare ground are projected. The development's physical imprint is approximated at 21 hectares, reflecting 9-10% of the study area, predominantly affecting improved agricultural grassland and conifer plantations, among other habitats. These alterations are primarily attributed to construction activities, with linear habitats such as hedgerows and treelines experiencing a 10-12% and 4-5% decline respectively. The EIAR notes potential indirect effects like invasive species spread and dust deposition but posits these as moderate and reversible at the county scale, highlighting mitigation as key.

9.6.14. For mammals, excluding bats, the EIAR predicts minimal, transient, and reversible effects due to habitat changes over approximately 21 hectares. It anticipates no direct loss of badger setts but acknowledges possible indirect effects, advocating for mitigation to circumvent significant repercussions, particularly during breeding seasons. The adaptability of pine martens suggests minimal impacts, whereas red squirrels may encounter short-term significant reversible effects prior to mitigation. With no direct impacts foreseen on otters, indirect effects are characterized as short-term, significant, and reversible, relating to potential construction disturbances or pollution transport.

9.6.15. In terms of bats, the EIAR evaluates the construction phase's impact on bat populations, highlighting vegetation removal in beech woodlands as detrimental to roosting sites and foraging areas. Although no demolition of buildings with bat roosts is planned, tree and hedgerow removal could disturb or eliminate roosts. The EIAR suggests that indirect construction impacts like habitat loss for foraging and commuting, alongside lighting disturbances, risk significant regional impacts, necessitating mitigation measures to ensure conservation and minimize long-term harm.

9.6.16. The EIAR's assessment of avifauna considers habitat loss/change and disturbance/displacement as primary concerns during construction. It categorises bird species by sensitivity levels, detailing specific mitigation strategies, such as timing construction to avoid sensitive periods and creating buffers to minimize disturbance, to manage these impacts effectively.

9.6.17. The EIAR details that the proposed wind farm and grid connection, situated outside European sites, are not expected to directly impact them during construction. The EIAR notes the Turbine Delivery Route (TDR) is close to several Special Areas of Conservation (SACs) and a Special Protection Area (SPA), with no planned works within these areas. It describes that an Appropriate Assessment Screening Report and Natura Impact Statement (NIS) were completed in line with the Habitats Directive. The EIAR asserts that the project will not significantly affect the integrity of European sites such as Slieve Bernagh Bog SAC, Glenomra Wood SAC, and others, either alone or cumulatively with other projects. Based on the NIS, the EIAR concludes that the project will not adversely impact the integrity of any European site, taking into account individual and cumulative effects, respecting the conservation objectives of the sites in question.

9.6.17.1. ***Potential effects during the operational phase of the Project***

9.6.18. The EIAR details that the operational phase impacts of the proposed wind farm will be less than those during construction. It notes that, while European sites are not directly impacted, mitigation measures are necessary to ensure no significant effects. The Natura Impact Statement concludes that, with mitigation, there will be no adverse effects on the integrity of European sites, including Lower River Shannon SAC and others. For NHAs and pNHAs, the operational phase is not expected to significantly affect them, with minimal impact on local wildlife such as Leisler's bat at Cloonlara House pNHA.

9.6.19. Regarding habitats and flora, the EIAR describes how managed habitats within turbine felling buffers will maintain a treeless state to prevent scrub and woodland progression. Operational phase activities are expected to have minimal impacts on local mammals, with infrequent human activity and existing agricultural practices considered to have imperceptible reversible effects. However, specific mitigation

measures are recommended for badgers to prevent potential moderate effects during breeding season.

9.6.20. Bats face a risk of collision with turbines, particularly Leisler's bats and Nathusius' pipistrelles. While most bat species will not be significantly affected with mitigation, these two species are at a particular risk. Avifauna collision risks are assessed with species-specific traits considered. The EIAR employs models to predict collision risks, suggesting low impact with proper mitigation, including controlled lighting.

9.6.21. For aquatic ecology, operational risks are low, with any potential pollution from oils and lubricants deemed unlikely. The EIAR anticipates minimal impacts on aquatic ecology due to the low ecological value of watercourses on-site and the low likelihood of water pollution during operation. The operational phase is unlikely to significantly impact Marsh Fritillary butterflies or other species identified, as maintenance activities will not involve areas critical for these species. Overall, the EIAR suggests that with effective mitigation strategies in place, the operational impacts on the local ecology are expected to be manageable and not significantly detrimental.

9.6.21.1. ***Potential effects during the decommissioning of the Project***

9.6.22. The EIAR, referencing the Natura Impact Statement, concludes that decommissioning the proposed wind farm will not adversely impact the integrity of European sites, including the Lower River Shannon SAC. Mitigation measures during decommissioning ensure no significant effects on these sites. Decommissioning involves disassembling turbines, with the grid connection remaining intact, resulting in no direct or indirect effects on nearby Natural Heritage or Proposed Natural Heritage Areas.

9.6.23. Habitat and flora impacts during decommissioning are anticipated to be minimal and reversible, with some temporary disturbance to hedgerows for turbine part removal. Mammals may experience short-term, local, and reversible impacts due to increased vehicular traffic and potential habitat disturbance. For bats, decommissioning poses only slight, short-term effects, as activities are less intensive compared to construction, and are not expected to disrupt key commuting routes.

9.6.24. Avifauna is expected to face minimal disruption during the six-month decommissioning phase, with temporary and reversible effects, except for breeding snipe or woodcock,

which may see a temporary but significant impact. Aquatic ecology impacts are assessed as slight, short-term, and local, with the existing grid connection minimizing additional effects.

9.6.25. For Marsh Fritillary and other fauna, there's a possibility of significant, short-term, local effects if landscaped features with larvae are disturbed. Overall, the EIAR suggests that the decommissioning phase will have reduced ecological impacts compared to the construction phase, with effective mitigation measures ensuring minimal long-term consequences.

9.6.25.1. *Potential cumulative effects on Biodiversity*

9.6.26. The EIAR comprehensively details the cumulative effects on biodiversity from the proposed wind farm and surrounding developments within a 20km radius. It notes that decommissioning impacts on avifauna and bats are anticipated to be similar to those during construction, with appropriate mitigation in place. The report expresses concerns over habitat loss and alteration due to agricultural and forestry activities, highlighting the lack of detailed mitigation information for some developments, which could potentially affect aquatic and terrestrial habitats. The Carrownagowan Wind Farm is detailed extensively and is expected to not significantly impact the ecology if mitigation is implemented correctly. Permission for several solar farms and housing developments has been granted, with the assessment showing they are unlikely to significantly affect biodiversity, given that mitigation measures are effective. Intensive agriculture and forestry are singled out for their contribution to water quality degradation and reduced flora diversity, potentially exacerbated by the wind farm's construction activities. While most developments are evaluated and are not expected to significantly impact the environment with mitigation measures, the report advises a cautious approach due to a few projects lacking in clear mitigation details.

9.6.27. **Mitigation Measures for Ecology**

9.6.27.1. *Mitigation by Avoidance and Design*

9.6.28. The EIAR describes mitigation measures aimed at reducing impacts on designated sites, flora, and fauna through avoidance and design. These measures include:

- Minimising the hard-standing area to reduce habitat and flora disturbance.

- Avoiding direct effects on designated sites through site design and layout.
- Placing all cabling underground to reduce collision risks to birds.
- Selecting grid connection routes that minimise land take in sensitive habitats.
- Maintaining buffers of 50m from natural watercourses, except at crossing points.
- Using clear-span bridges and pre-cast concrete culverts for stream crossings to minimise ecological disturbance.
- Utilising directional drilling for grid connections to reduce in-stream works and potential contamination.
- Placing cables underneath public roads to avoid impacts on roadside hedgerows.
- Designing TDR Node 9 with consideration for adjacent ecological features, ensuring it does not overlap or abut critical habitats.

9.6.29. These mitigation measures are intended to avoid, reduce, and offset significant ecological impacts during the construction, operation, and decommissioning of the wind farm and will be implemented as part of the project.

9.6.29.1. ***Mitigation measures during the construction phase***

Habitats and Flora

9.6.30. The EIAR details mitigation measures for the proposed development to minimise its environmental impact, including using existing roads and limiting disturbance to designated areas. It describes plans for habitat conservation by reinstating hedgerows and treelines using native species, with 12 new hedgerows spanning 1.4 kilometers to enhance landscape connectivity. Additionally, the EIAR notes strategies for managing non-native invasive species, including pre-construction surveys and strict protocols for containment and eradication. It also states that a Project Ecologist will oversee these measures, ensuring compliance and coordination throughout the construction process.

Mammals

The EIAR details a series of mitigation measures designed to safeguard mammals during the construction phase of the wind farm project. Preconstruction surveys are mandated to identify the presence of species such as badgers and red squirrels, and should unanticipated wildlife habitats be found, immediate action will be taken in

consultation with the National Parks and Wildlife Service (NPWS). To minimise disturbances to wildlife, construction activities are to be carried out predominantly during daylight, with any exceptions subject to strict ecological supervision. Additionally, a thorough mammal survey will be conducted, with a particular focus on badgers, to update the status of their habitats as the project shifts from planning to construction. The EIAR includes a confidential mitigation plan for badgers, which provides for measures like temporary sett closures during non-breeding seasons and mandates post-construction reporting to the NPWS. For other species such as otters, red squirrels, and pine martens, the EIAR prescribes specific protective measures during sensitive breeding times, which may involve ecological surveys and obtaining necessary felling licenses. The EIAR underscores the importance of on-site ecologist oversight during vegetation clearance to prevent disturbing any badger setts, and in case of any accidental wildlife injuries, appropriate welfare agencies will be engaged. It also notes the absence of otter holts within the immediate wind farm area but requires updates to the environmental status prior to construction to ensure any otter activity nearby is considered, with NPWS to be notified if holts are discovered. The EIAR describes a variety of procedures to protect mammals such as the Irish hare, pygmy shrew, and hedgehog, including inspections prior to land clearance and supervised maintenance during their breeding and hibernation periods, to avoid any detrimental impact on these species. These planned measures showcase a commitment to minimizing the environmental footprint of the construction activities and ensuring compliance with wildlife protection standards.

Bats

9.6.31. The EIAR details a strategy for protecting bats during the construction and operation of the wind farm, incorporating a 50m buffer zone around turbines following SNH (2021) guidance. This buffer is calculated using a formula considering blade and hub height, and feature height, informed by bat activity surveys and habitat assessments. Vegetation around turbines will be managed without chemicals, under ecological supervision, to prevent harm to wildlife.

9.6.32. Mature trees and treelines are to be preserved, with a waiting period before felling to allow bats to vacate. Features conducive to roosting will be relocated to maintain roosting opportunities. New pollinator-friendly hedgerows will be planted to create

commuting routes for bats, with species chosen for quick growth to establish continuous corridors.

9.6.33. Pre-construction roost surveys and derogation licenses from NPWS are mandatory if surveys and construction are not concurrent. Compensation for habitat loss includes planting double lines of native fruiting hedgerows and prescribing maintenance practices for hedgerow vitality. Lighting will be managed to minimize disturbance, favouring daylight work and directional lighting to reduce light pollution. These measures aim to preserve bat populations and their habitats, ensuring ecological integrity and compliance with wildlife regulations.

Avifauna

9.6.34. The EIAR provides mitigation strategies to protect avifauna. It includes planting new pollinator-friendly hedgerows with fast-growing willows and wildflower strips for hunting grounds. Vegetation removal and tree trimming will occur outside bird breeding seasons, with ecologist inspections and NPWS-recommended buffers if needed during these times. Construction will be scheduled for daylight to minimize disturbance to nocturnal birds, with limited night operations under ecological supervision. Construction staff will receive educational talks to reduce avian disturbances.

9.6.35. Native species will be planted in reinstated hedgerows to support birds like the Greenfinch, while water quality protection measures will guard species dependent on aquatic habitats. Re-confirmatory surveys for birds such as Barn owls, Buzzards, and Kestrels will inform work restrictions to protect breeding. Meadow Pipits' nests will be identified and protected during their breeding season. These measures are designed to ensure the wind farm's operations do not negatively impact local bird populations and that they align with conservation standards.

Aquatic Ecology

9.6.36. The EIAR includes detailed mitigation measures for aquatic ecology, aimed at preserving water quality and protecting sensitive aquatic species. These measures, outlined within the Construction Environmental Management Plan (CEMP), are specifically designed to protect downstream watercourses connected to the Lower River Shannon SAC. The EIAR specifies that localized tree felling will employ strategies including check dams and silt fences to reduce sediment runoff. Manual

felling will be used in riparian corridors to minimise stream disturbance. Felling operations will follow best practice guidelines from the Department of Agriculture, Food and the Marine and the Forestry Service to prevent sediment and nutrient runoff, and are scheduled for spring to coincide with grass sowing that aids sediment filtration. Activities will pause during heavy rainfall to prevent erosion.

9.6.37. The construction phase includes a Surface Water Management Plan to prevent siltation and pollution, particularly in the handling of excavations and spoil heaps. Horizontal directional drilling (HDD) will be utilized for river crossings to minimize ecological disruption, with careful monitoring to prevent leaks of drilling fluids.

9.6.38. The EIAR highlights the importance of biosecurity, with rigorous cleaning protocols to stop the spread of invasive species and pathogens like the Crayfish plague. This includes steam-cleaning machinery used in riparian zones before it is deployed in sensitive catchments. A specific Invasive Species Management Plan will address management strategies for each invasive species along the grid route.

9.6.39. For the grid connection, protective measures will ensure water quality is maintained, with special attention to excavation and sediment control. An Emergency Erosion and Silt Control Response Plan is incorporated within the CEMP for any potential sediment-related incidents. Additionally, strict guidelines for the storage and refuelling of machinery will be implemented to prevent contamination of watercourses.

Marsh Fritillary

9.6.40. A pre-construction survey in August/September will reconfirm the presence of marsh fritillary larvae. If found, translocation to suitable habitat outside the construction area will occur under ecological supervision. This involves marking and carefully excavating the larvae's surroundings and placing them in receptor sites with abundant suitable habitat. Translocation will be done promptly after the survey if needed.

9.6.40.1. *Mitigation measures during the operational phase*

9.6.41. The EIAR outlines various mitigation measures to address and prevent indirect effects on water quality and sensitive species such as Leisler’s bats and lesser horseshoe bats, as detailed in sections 8.6.3.6 and Chapter 10 of the EIAR, along with the Natura Impact Statement (NIS). These measures include continuous monitoring and

treatment of invasive species, maintaining buffer zones, and specific strategies for habitat and flora preservation.

9.6.42. For mammals, the EIAR prescribes manual maintenance of woodland fencing near badger setts, observing specific distances to avoid disturbances during breeding and non-breeding seasons, and incorporating passageways for smaller mammals into deer fencing.

9.6.43. Bat mitigation during the operational phase involves operational adjustments including blade feathering at low wind speeds, increasing turbine cut-in speeds during active bat periods, and lighting management to minimise disturbances. Habitat management around turbines will discourage insect congregation, thus reducing bat attraction. Planting new hedgerows aims to compensate for lost commuting routes for bats.

9.6.44. A detailed post-construction monitoring program for avifauna will assess mitigation efficacy, involving fatality monitoring, flight activity surveys, wildfowl censuses, and breeding bird and wader surveys. These actions are designed to quantify and analyse wind farm impacts on bird populations.

9.6.45. For aquatic ecology, the EIAR indicates negligible impacts expected during the operational phase, with mitigation strategies in place for potential risks like oil spills from transformer cooling systems. Maintenance activities will be carefully managed, with a rigorous inspection schedule to maintain sediment control measures, ensuring minimal disruption to the site's hydrological regime.

9.6.45.1. *Mitigation measures during the decommissioning of the project*

9.6.46. The EIAR details that during the decommissioning phase of the wind farm, the mitigation measures employed during the construction phase will be reiterated. This ensures continuity in the protection of the environment and local wildlife. To ascertain whether habitats for mammals, including setts or holts, have been established during the operational phase, mammal surveys will be conducted. Similarly, badger and otter habitats will be examined for signs of new breeding or resting sites.

9.6.47. For aquatic ecology, the same precautions taken during construction will apply to decommissioning. The surveys will check for any new aquatic habitats that might have formed during the operational phase. Although decommissioning activities will follow

the same mitigation measures as construction, the EIAR posits that the potential impacts will be less severe due to the reduced scale of operations.

9.6.48. The EIAR proposes leaving the turbine foundations, access tracks, and hardstand areas intact, covered with local soil and topsoil to promote revegetation, as removing them could cause greater environmental harm. The grid connection infrastructure, including cables, ducting, and the substation, is intended to remain as part of the national grid. Consequently, no decommissioning impacts or mitigation measures are anticipated for these components.

9.6.48.1. ***Enhancement Measures***

9.6.49. The EIAR posits that to enhance biodiversity at the proposed development site, several measures will be implemented as detailed in the Biodiversity Enhancement & Management Plan. The quarry area will retain 4.6 hectares of mixed woodland to mature naturally, with signage to prevent disturbance while allowing animal access. Nest boxes for barn owls and kestrels will be installed under supervision, with poles as alternatives to trees if needed. Additionally, to establish a new oak woodland, c. 3.1 hectares of conifer plantation will be replaced with oak saplings from adjacent woods and other native species like birch and holly, allowing some areas for natural recolonisation. Controlled grazing and possibly pigs may be used for vegetation management.

9.6.50. Ballymoloney Woods, spanning c.3.8 hectares, will be fenced to encourage natural regeneration, currently hindered by overgrazing. The fence design will include mammal-friendly gaps. Moreover, to support bee populations, soil banks will be constructed near T6 and T8 turbines, with vegetation management to prevent overgrowth. Log piles from felled timber will create habitats for insects, and refugia or hibernacula structures will shelter diverse wildlife. Wildflower strips planted along access tracks will enhance native flora diversity, requiring fencing if adjacent to agricultural lands. The seed mix for these strips will be of native provenance, including a variety of species beneficial to local fauna like the Large Red Tailed Bumble Bee. These enhancement measures are aimed at not only mitigating the impact of the development but also proactively improving the ecological value of the area.

9.6.50.1. ***Vulnerability to major accidents, fire risk and catastrophic events***

9.6.51. The EIAR assesses the potential environmental impacts of major accidents or disasters as limited, with the main concerns being the storage of hydrocarbons, chemicals, and waste, and their potential release into watercourses affecting biodiversity. Mitigation measures detailed in the Hydrology and Water Quality chapter address sediment and pollutant control during construction.

9.6.52. For fire risks, the EIAR describes the implementation of Emergency Response Plans aligned with IWEA Health and Safety Guidelines, which include quick detection through design and remote monitoring, along with staff training and procedures for fire response.

9.6.53. The risk of catastrophic events, such as wind turbine collapse, is mitigated by strategic siting of turbines, ensuring a minimum 500m distance from residential dwellings and 1.5 times the turbine tip height from the on-site substation, with ground conditions and slope stability thoroughly assessed to minimize foundation failure and landslide risks.

9.6.54. Advanced monitoring and control systems in the wind turbines manage operational safety, including rotational speed management and shutdown capabilities in extreme wind conditions. The turbines are equipped with emergency power and fire suppression systems, and the project includes detailed emergency escape procedures for staff.

9.6.55. **Residual Ecological Impacts**

9.6.55.1. ***Re. European Sites***

9.6.56. The EIAR states that the turbine delivery route and grid connection will not adversely affect the integrity of European sites, specifically the Lower River Shannon SAC and other designated areas, due to comprehensive mitigation measures. These measures are designed to ensure that the wind farm, both alone and in combination with other projects, will not impact the conservation objectives of these sites.

9.6.57. It identifies potential effects on downstream pNHAs within the Zone of Influence but assures that detailed mitigation measures developed in the EIAR and NIS will maintain the integrity of the SACs, SPAs, and pNHAs. No significant residual impacts are expected on designated sites, with only slight long-term impacts at a regional level anticipated for specific pNHAs like Cloonlara House pNHA.

9.6.57.1. ***Habitats and Flora***

9.6.58. The EIAR recognises that the construction of the Fahybeg Wind Farm will result in some permanent habitat loss, encompassing the area occupied by roads, turbine footprints, construction compounds, a substation, and areas around these due to required felling. However, it clarifies that not all changes are permanent as the land altered for the turbine delivery route will be restored post-construction, and felled areas will transition to different habitats within the project's footprint. The report further details that mitigation strategies, as detailed out in the Biodiversity Chapter and Chapter 10 on 'Hydrology and Water Quality,' including the use of Horizontal Directional Drilling (HDD) at grid connection watercourse crossings, will prevent significant loss of valuable aquatic habitats. An invasive species management plan will prevent the spread of invasive species.

9.6.58.1. ***Mammals (excluding Bats)***

9.6.59. The EIAR includes measures to protect mammal species during development. Scheduling felling operations outside of breeding seasons for Red Squirrels, Pine Martens, and Irish Stoats, and conducting pre-felling ecological surveys will mitigate impact. For the Irish Hare, Pygmy Shrew, and Hedgehog, vegetation checks before clearance will ensure their protection. Badgers will have buffer zones during construction to minimize impact, with maintenance operations adjusted to avoid breeding season disturbances.

9.6.60. Loss of mammal habitats will be addressed by maintaining turbine buffer zones, minimising long-term negative effects. Otters will benefit from strategies ensuring short-term, non-significant residual effects, reinforced by adherence to water quality and hydrology guidelines.

9.6.61. The site is moderately to highly suitable for several bat species, as evaluated using the Lundy et al. habitat suitability index. Mitigation measures outlined in the EIAR aim to reduce collision and barotrauma risks for bats, especially for high-risk species, ensuring the conservation status of bats remains favourable.

9.6.61.1. ***Avifauna***

9.6.62. The EIAR outlines measures to minimise impact on avifauna, including a survey to identify species like Barn Owl, Buzzard, Kestrel, Sparrowhawk, Snipe, and Woodcock. New nests will trigger work restrictions during breeding season. A post-construction monitoring program will assess barrier effects and bird fatalities. The proposed wind farm is expected to have a Slight-Imperceptible Reversible Residual Effect on birds, with Kestrel effects predicted to be Moderate at the local level.

9.6.62.1. ***Aquatic Ecology***

9.6.63. The EIAR identifies slight negative impacts on aquatic ecology and fisheries during construction, particularly from siltation and runoff. Mitigation measures are proposed to reduce these effects to negligible levels. These measures include careful scheduling of instream works and management of sediment discharge, particularly near sensitive habitats. With these mitigations in place, the EIAR concludes that the wind farm will comply with environmental standards, ensuring no deterioration of Water Framework Directive Waterbodies and preserving good waterbody status.

9.6.63.1. ***Marsh Fritillary***

9.6.64. Regarding the Marsh Fritillary, the EIAR notes that larval webs were observed outside the proposed development area, with some of the potentially suitable larval habitat, characterized by rough grassland with abundant S. pratensis, overlapping with the proposed development footprint. The EIAR suggests that by implementing the mitigation measures outlined in section 8.6.2.10 of the EIAR, the residual effects on the Marsh Fritillary will be reduced to imperceptible levels.

9.6.65. **Conclusion**

9.6.66. In my detailed assessment of the proposed development as presented in the EIAR, I have taken into account the Planning Authority's concerns regarding biodiversity conservation as specified in the Clare County Development Plan. The refusal was based on the projected significant diminishment of biodiversity, including the usage of the site by bats and birds and the ecological importance of areas including thee Ballymoloney Wood. I have also taken into account issues raised in the submissions and observations received.

9.6.67. Having reviewed the proposal, I acknowledge that the construction phase will notably transform c. 21 hectares of habitat, leading to a substantial shift from wooded areas to open spaces and potentially significant biodiversity losses that conflict with local conservation objectives. The direct and indirect impacts, along with cumulative effects of the project and other developments in the area, have been evaluated for their likely significant effects on biodiversity, particularly habitats and flora.

9.6.68. The EIAR proposes mitigation measures to address these concerns. The commitment to habitat reinstatement with native species and the planning of site clearance to minimise habitat disruption are essential steps toward mitigating the biodiversity loss. The appointment of a Project Ecologist or Ecological Clerk of Works would ensure ongoing ecological considerations throughout the construction phase, which is integral to the project's adherence to environmental standards.

9.6.69. For mammals, the EIAR predicts minimal and reversible impacts with the implementation of tailored mitigation measures to protect species like the Pygmy Shrew, Irish Hare, Irish Stoat, and Hedgehog, and notably, the creation of buffer zones during woodland fencing maintenance to avoid disturbing badgers during their breeding season. The EIAR anticipates the loss of grassland and woodland habitats used by foraging and breeding mammals but expects the mitigation measures to minimise residual effects.

9.6.70. In terms of bat populations, the EIAR indicates significant effects due to habitat loss from vegetation and tree removal, particularly in high-activity foraging grounds. The mitigation strategy includes a 50m buffer zone around turbines, bat activity surveys, and vegetation management plans to ensure habitat preservation for bats. These measures would reduce the risk of collisions and maintaining ecological connectivity for commuting bats.

9.6.71. Avifauna are expected to experience habitat loss and disturbance during construction. The EIAR outlines measures such as hedgerow planting and limitations on construction lighting to mitigate these effects. A robust monitoring program will track the success of these measures and adapt as needed.

9.6.72. The EIAR also addresses potential risks to aquatic habitats from construction activities, with protective measures such as check dams and silt fences proposed to preserve water quality. I consider the proposed mitigation strategies for aquatic

ecology would be effective, with a detailed Construction Environmental Management Plan ensuring the protection of water bodies.

9.6.73. In conclusion, it is my view that the EIAR provides a comprehensive set of mitigation measures that, if implemented effectively, would prevent significant adverse effects on biodiversity. These measures are designed to be specific and measurable, ensuring that the wind farm's impact on the local environment is minimised and managed throughout its lifecycle. With these measures and ongoing monitoring and adaptive management, the proposed wind farm would maintain ecological integrity and comply with environmental regulations.

9.7. Land, Soils and Geology

9.7.1. Methodology

9.7.2. The EIAR adopts a detailed methodology aligning with national and European guidelines to assess the project's environmental impact, particularly on geology, hydrology, and hydrogeology. It adheres to the Water Framework Directive's goals to prevent the deterioration of EU aquatic ecosystems, aiming for "good status" of waters.

9.7.3. Consultations with key statutory bodies have informed the scope of the assessment, particularly regarding geological and water quality impacts. Through extensive data review and site-specific investigations, the EIAR evaluates potential impacts, identifying mitigation measures to ensure residual effects remain within environmentally acceptable levels.

9.7.4. The EIAR adopts a criteria framework to assess impacts during all project phases, rating geological features' importance and estimating impact magnitude, with results documented in detailed significance tables. Comprehensive desk studies and field assessments, including geomorphological surveys and geotechnical testing by Irish Drilling Ltd, underpin the project's site decisions.

9.7.5. Receiving Environment

9.7.6. The EIAR presents a thorough geology, soil, and hydrogeology assessment, revealing the site is predominantly underlain by glacial Till, except for one turbine over bedrock. Peaty topsoil deposits are limited. The EIAR evaluates the hydrogeological context,

noting groundwater vulnerability varies from 'High' to 'Extreme' along the grid route due to bedrock proximity. Groundwater bodies under the site, classified as 'Good', are not considered at risk.

9.7.7. No groundwater source protection zones are present, and the nearest public water supply lies 1.4km away. Despite no carbonate bedrock within the main site or grid route, the potential for karst exists in areas with underlying carbonate rocks. The EIAR's geological heritage assessment confirms no designated heritage sites within the project area, with the closest heritage site located 5.5km away. The economic geology review reveals no significant mineral occurrences within the site, though granular aggregates are noted in the western portion.

9.7.8. Site investigation results from February to July 2022 show varied strata at turbine locations and confirming ground conditions for the substation sites. No contamination evidence was found, and made ground deposits suggest quarry wash material. Slope stability assessment indicates low landslide susceptibility, with no historical activity within 1km, and varied topography across the site.

9.7.9. **Potential Effects**

9.7.9.1. ***Do Nothing Impact***

9.7.10. If the proposed project is not built, the current land uses are likely to continue for the foreseeable future. As a result, the impact on the land, soils, and geology would be unaffected.

9.7.10.1. ***Construction Phase***

Tree Felling

9.7.11. The EIAR indicates that the construction phase will necessitate the permanent felling of c. 17.7 hectares of forestry to make way for turbines, hardstands, crane pads, and other infrastructure. This action is contingent on securing a Felling Licence from the Forest Service, in line with policies for wind farm developments. The proposed tree felling, involving heavy machinery, could expose underlying soils to erosion and increase sediment and nutrient levels in surface water runoff, with possible subsequent impacts on the groundwater in the Locally Important Aquifer below the

site. Additionally, the storage and use of fuels and oils during the felling process present a risk of soil and groundwater contamination through potential spills and leaks. The EIAR assesses the magnitude of potential impacts on geological and hydrogeological receptors, prior to mitigation, as being of slight significance.

Earthworks

9.7.12. The EIAR details necessary construction earthworks for wind turbine infrastructure, which could impact land, soils, and geology due to material excavation and movement. It notes the specific dimensions for turbine foundations (depths of 3.5m and diameters of 25m) and plans for on-site reuse of excavated materials to minimize environmental disruption. The report highlights potential issues such as soil compaction, increased runoff and erosion, spill contamination, and aggregate resource depletion. Hydrogeological concerns include groundwater pollution and aquifer vulnerability. These impacts are deemed moderate to slight for geological and moderate for hydrogeological aspects, with a high likelihood of occurrence. Effective management is emphasised to mitigate these effects during construction.

Slope Stability

9.7.13. The EIAR details that the proposed development is mostly in areas with 'Low' to 'Moderately High' landslide susceptibility, with some 'High' susceptibility zones north of the site, outside planned infrastructure. It notes that construction could risk landslides, potentially impacting sensitive receptors, although surveys showed no evidence of past landslide activity. It further describes that shallow peat on-site doesn't warrant a stability analysis.

9.7.14. Potential environmental impacts from slope instability could disrupt geological conditions, endanger workers, damage infrastructure, and affect urban areas. Slope failures may also introduce acidic or peat-laden waters into water features, impacting water quality and groundwater in the Locally Important Aquifer. The EIAR assesses potential soil and geological impacts as 'Small Adverse' with 'Low' importance in the turbine area, but 'Moderate/Slight' significance in the eastern part where infrastructure is key. Hydrogeological impacts are considered 'Moderate Adverse', with a moderate significance and low occurrence probability.

Internal Access Roads, Hardstands, Temporary Construction Compound and Substation

9.7.15. The EIAR details the creation of 8.5 km of internal access tracks for the project, with 7.1 km being new construction and 1.4 km of upgrades to existing tracks. These tracks, approximately 5 meters wide, will include hardstands at turbine locations and a drainage system to manage runoff, enhancing existing drainage where necessary. Surplus soil, gravel, and glacial till will be used for land reinstatement around the construction sites, with materials sourced both on-site and from local quarries.

9.7.16. The EIAR notes that the construction may compact soil, increasing runoff and erosion potential, and that fuel and oil usage could contaminate exposed soils. Soil compaction and related impacts are considered 'Small Adverse' near the turbines with 'Low' importance but 'Moderate/Slight' in areas with sand and gravel pits where their importance is 'High'.

9.7.17. Hydrogeological impacts could include groundwater pollution, aquifer vulnerability, and silt infiltration, especially due to cement-based compounds used during construction. These are rated as 'Moderate Adverse' impacts with a 'Medium' importance level for groundwater receptors, and are likely to occur if unmitigated.

Internal Cabling and Grid Connection

9.7.18. The EIAR outlines the necessary electrical infrastructure for turbine operation. It states that electricity will be collected via buried cables and exported to the grid through a 38kV cable. The EIAR describes the installation of ducting and ancillary infrastructure along existing roads, using high-density polyethylene ducting surrounded by cement-bound material for public road cable trenches, and backfilled with excavated material on-site.

9.7.19. The majority of the grid connection route (GCR) is through Glacial Till, reducing groundwater contamination risk. The EIAR notes potential changes in groundwater movement and contamination pathways from the GCR, with excavations potentially increasing erosion. Unsuitable materials will be disposed of following environmental guidelines.

9.7.20. Impacts of these works are 'Small Adverse' for low-importance soil and geology receptors around turbines and 'Moderate/Slight' for high-importance areas near the

substation. The impacts are classified as negative, moderate to slight, permanent, direct, and highly probable. Groundwater impacts are 'Small Adverse', deemed 'Slight' in significance, with a similar negative and highly probable classification.

Horizontal Directional Drilling (HDD)

9.7.21. The EIAR analyses the impact of using Horizontal Directional Drilling (HDD) at four GCR locations to cross a watercourse. It states HDD will occur within a day from a public road, involving a drilling rig set up 10 meters from the stream bank. A starter pit is excavated for a pilot hole, drilled with precision to allow a cable duct, which is later sealed, to be pulled through.

9.7.22. The EIAR details mitigation measures in the CEMP, noting potential impacts include groundwater contamination from spills and overburden collapse at HDD sites. These impacts are deemed 'Small Adverse' for low-importance soil and geological receptors and 'Slight' before mitigation. Groundwater impacts are similarly rated 'Small Adverse' and 'Slight' for medium-importance receptors, with the overall classification being negative, slight, permanent, direct, and highly probable.

Turbine Delivery Route (TDR)

9.7.23. The EIAR describes the Turbine Delivery Route (TDR) from Foynes Port, requiring temporary modifications such as removing street furniture and vegetation trimming, as detailed in the EIAR's Chapter 13 and Table 9-13. The TDR will involve excavation, possibly exposing bedrock and leading to potential erosion. The EIAR describes these soil and geological impacts as 'Small Adverse' and of 'Low' importance, with an 'Imperceptible' significance before mitigation. Groundwater impacts are rated 'Medium' importance and considered 'Slight' in significance prior to mitigation.

9.7.23.1. ***Operation Phase***

9.7.24. The EIAR outlines few direct impacts anticipated during the operational phase of the Fahy Beg Wind Farm, including minor accidental fuel/oil leaks from construction traffic and potential spills from oil-cooled grid transformers, turbine transformers, and a backup battery energy storage system. The impacts on soils and geology receptors are 'Small Adverse' for the turbine area, where importance is 'Low', and 'Moderate/Slight' for the eastern part of the site where the substation is located, where the importance is 'High'. These are deemed negative in effect with moderate to slight

significance, short-term, direct, and unlikely to occur. Groundwater impacts are considered 'Negligible' and 'Imperceptible', also with low occurrence probability.

9.7.25. Indirectly, the EIAR details maintenance of access tracks might intermittently use materials from local quarries, impacting soils and geology receptors with 'Small Adverse', 'Low' importance, and 'Imperceptible' significance. The EIAR suggests these operational phase risks are manageable with low significance, given appropriate mitigation.

9.7.25.1. ***Potential Impacts during Decommissioning Phase***

9.7.26. The EIAR states that the decommissioning phase's impacts are expected to be less severe than those during construction and offers a chance to mitigate earlier impacts. It details that areas such as turbine bases can be rehabilitated by adding topsoil to encourage vegetation and reduce runoff. Persistent impacts like soil compaction and potential fuel contamination are expected to continue but at a lower intensity. The EIAR references Scottish Natural Heritage guidance, which suggests flexible reinstatement approaches to accommodate future technological advancements. It also notes that grid connection route ducts and cables will be left in place post-decommissioning, leading to no significant soil or geological effects. In conclusion, decommissioning is anticipated to have some environmental impacts, but these are considered manageable and of lower significance compared to the construction phase.

9.7.26.1. ***Potential Cumulative Impacts***

9.7.27. The EIAR includes an assessment of potential cumulative impacts, focusing on land, soils, and geology within a 20-kilometer radius of the site. The EIAR details that planning searches were conducted using various online portals of local councils and An Bord Pleanála. It states that the majority of identified applications would not cause a cumulative effect due to their scale or distance from the proposed development. However, the EIAR identifies two relevant projects: Lackareagh Wind Farm, located 2 km north, and Carrownagowan Wind Farm, c. 4.6 kilometres north. Both at the time of writing the EIAR were in pre-planning or pending approval stages, respectively. The EIAR posits that if these projects' construction overlaps with Fahy Beg, there may be

a supply issue with local quarries for imported aggregate, considering this as a 'Small Adverse' impact on subsoils and bedrock with 'Medium' importance.

9.7.28. The EIAR notes the potential for cumulative impacts on groundwater from runoff at both sites but assesses these impacts as 'Negligible' in nature, with the importance of groundwater receptors rated as 'Medium' and the cumulative impact as 'Imperceptible' in significance.

9.7.29. The EIAR describes the Carrownagowan Wind Farm as sharing part of the grid connection route with the proposed Fahy Beg wind farm. It indicates that the construction of grid connection works, which will entail localized and short-duration excavation, is expected to be linear and transient and will not result in any significant cumulative effects.

9.7.30. **Mitigation Measures**

9.7.30.1. ***Mitigation by Design and Best Practice***

9.7.31. The EIAR highlights the site's design as a primary mitigation measure, with infrastructure placement in areas already modified by quarrying, agriculture, or forestry, where soils are worked and drained. To minimise impacts on geology, hydrogeology, and slope stability, the EIAR describes measures taken during preliminary design, including peat probing, site surveys, trial pit excavation, and slope stability assessments documented in the Geotechnical Assessment Report (Appendix 9.1). The EIAR also emphasises that relocation and micro-siting of turbines and access roads were informed by site and geotechnical assessments to reduce ground risks. The design and checks were performed by qualified geotechnical and civil engineers, with their competence detailed in Chapter 1 of the EIAR.

9.7.32. The EIAR outlines that detailed design risk assessments will be conducted to evaluate risks throughout the project's lifecycle, with impacts minimized through avoidance, prevention, and protection. Contractors will prepare detailed method statements for each work element before commencement, and geotechnical personnel with suitable qualifications will supervise significant excavation and earthworks on-site. The EIAR mandates that work scheduling must consider weather conditions to avoid severe weather, which could affect the effectiveness of these mitigation measures. This

comprehensive approach ensures proactive management of potential risks and impacts throughout the project.

9.7.32.1. ***Mitigation measures during Construction Phase***

Construction Environmental Management Plan (CEMP)

9.7.33. The EIAR provides details of the Construction Environmental Management Plan (CEMP) for the proposed project. The CEMP is designed to manage environmental aspects during the construction phase. It defines work practices, environmental management procedures, and responsibilities related to construction. The CEMP encompasses measures for construction, operation, and decommissioning to protect the environment and minimize potential impacts. The final CEMP will be developed further during construction, addressing planning conditions and additional mitigation measures as needed, and it will be submitted to the planning authority. Specific sections of the CEMP pertaining to the mitigation of potential impacts on Land, Soils, and Geology are referenced for further details in the report.

Tree Felling

9.7.34. The EIAR identifies potential impacts from tree felling activities, such as soil erosion and increased sediment and nutrient concentrations in runoff. To mitigate these, the EIAR outlines primary measures, including silt-laden runoff management. This involves training personnel in pollution control response, using silt protection controls, deploying settlement ponds, protecting stockpile materials, and minimizing soil disturbance.

9.7.35. Additional mitigation measures during construction include shallow drains, capping tracks, fencing to protect open water bodies, and refuelling protocols. The report emphasises the use of containment for transformer oil leaks and visual inspections during the operational phase. During decommissioning, measures include reinstating protection controls and using erosion control matting if needed. For flooding mitigation, settlement ponds and swales are incorporated into the drainage system, and precautions are taken during extreme flood events to avoid personnel on-site.

9.7.36. The EIAR emphasises best practices to prevent silt-laden runoff into watercourses during tree felling activities. It also details measures for fuel and oil storage, including

double-walled storage tanks, designated refuelling areas, bunded material storage, and the availability of emergency drip trays and spill kits on-site.

Earthworks

9.7.37. The EIAR outlines several mitigation measures to reduce environmental impacts during the construction of the Fahy Beg Wind Farm. Phased construction will limit open excavations at any given time. Experienced geotechnical personnel will supervise excavation and earthworks. Retention of excavated overburden on-site minimizes material export.

9.7.38. Site-won materials including gravel will be used for access tracks, hardstands, and landscaping. Surplus overburden will be temporarily stored, shaped, and sealed to prevent water ingress. Work corridors will restrict machinery to protect undisturbed soils, and excavations will proceed from access tracks.

9.7.39. Erosion control measures include prompt backfilling, work cessation during heavy rainfall, and designated refuelling areas. Excavated soil will be managed following best practices, with materials sent to licensed facilities for disposal or recycling. Temporary cuts and excavations will be stable or supported, with gravel fill as needed to prevent instability, water ingress, or erosion. These measures demonstrate the EIAR's commitment to minimizing the environmental impact of construction activities.

Control of Sediment Laden Runoff

9.7.40. The EIAR emphasises the Surface Water Management System and associated mitigation measures to minimise the impact of runoff on surface water quality, with detailed information available in Section 4.3.5 of the Construction Environmental Management Plan (CEMP) in Volume 3, Appendix 3.1.

9.7.41. The EIAR recommends best practices to prevent silt-laden runoff from entering watercourses. This includes maintaining existing forestry drainage, installing additional site drainage and settlement ponds as needed, and implementing silt fencing at new drainage locations. Water quality monitoring will be ongoing during construction, and final drainage construction will occur after other activities are completed. Silt fencing will be maintained until vegetation cover is established to reduce sedimentation risks. More details on surface water issues can be found in Chapter 10 of the report.

Measures for Spills

9.7.42. The EIAR outlines specific measures to manage and mitigate the risk of spills during the construction phase, especially concerning fuel and oil used in construction machinery. Detailed in Section 4.3.5 of the Construction Environmental Management Plan (CEMP), these measures include self-contained double-walled storage tanks to prevent leakage and refuelling at designated areas only.

9.7.43. The EIAR presents a set of mitigation measures for managing hydrocarbons on the construction site. This involves careful handling of fuels, lubricants, and hydraulic fluids to prevent spills. In the event of a spill, immediate containment will be followed by the removal and proper disposal of contaminated soil. Waste oils and hydraulic fluids will be collected in leak-proof containers and removed for disposal or recycling. Spill control equipment, such as oil soakage pads, will be readily available on-site and in plant equipment to address accidental spillages.

Slope Stability

9.7.44. The EIAR outlines measures for slope stability during detailed design and construction. These include implementing best practices, having qualified geotechnical engineers, hydrologists, and drainage engineers supervise, establishing drainage infrastructure before excavations, avoiding loading on soft ground without proper assessment, starting excavations from access roads or hardstanding areas, conducting stability assessments for turbine locations, prohibiting rock blasting, ensuring proper support for excavations near slopes, suspending earthworks during heavy rainfall, and having an emergency plan for landslides or slope failures. Further details can be found in the CEMP in Appendix 3.1 of Volume 3 of the EIAR.

Groundwater

9.7.45. The EIAR outlines measures to protect the aquifer and prevent groundwater pollution. These measures include swiftly constructing and backfilling excavations to reduce vulnerability to contamination, halting excavation activities during or before heavy rainfall, and refuelling machinery only at designated areas to avoid groundwater contamination. The report also details spill handling and fuel storage procedures. Groundwater monitoring wells will be installed to assess impacts during construction, recognizing potential gaps in the Geological Survey of Ireland (GSI) database on groundwater wells.

9.7.46. The EIAR assumes the presence of a well in every household within 1km of the site boundary and deems the risk to groundwater supply wells imperceptible with mitigation measures. In the unlikely event of an unknown domestic well being affected, an alternative water supply will be provided. Trenches for the project will be shallow and open for short periods to minimize the need for dewatering and prevent well impact. Cable trenches will be excavated in dry periods, kept open for minimal time, and include clay plugs or similar materials to inhibit groundwater and contaminant movement.

9.7.46.1. ***Mitigation measures during Operation Phase***

9.7.47. The EIAR anticipates that the operation of the wind farm won't significantly impact geological and hydrogeological conditions post-construction. The primary operational phase concern is groundwater contamination from spills. To address this, all fuel storage tanks for machinery will be self-contained and double-walled.

9.7.48. Refuelling of maintenance vehicles will occur at designated areas, either from these tanks or delivery vehicles. Specific mitigation measures include careful handling of fuels and lubricants, immediate containment and disposal of spills, collection of waste oils and fluids in leak-proof containers for proper disposal or recycling, and the presence of spill control equipment at refuelling areas.

9.7.49. The EIAR notes that no additional mitigation measures are needed beyond the substation transformer's existing design features, which already include bunding to protect against potential leakages of oils and battery fluids.

9.7.49.1. ***Mitigation measures during Decommissioning Phase***

9.7.50. The EIAR outlines that many of the mitigation measures applied during construction will also be relevant during decommissioning. The Irish Wind Energy Association (IWEA) suggests that certain features, like wind turbine concrete bases, may have a more environmentally benign impact if left in place. The EIAR describes the intention to leave turbine foundations, access tracks, and hardstanding areas as they are, covering turbine bases with overburden for re-vegetation and integrating access tracks and hard standings into the landscape.

9.7.51. Additionally, the EIAR details that the grid connection infrastructure, including substations and electrical equipment, will remain part of the national grid. Removing this infrastructure could lead to significant environmental disruption, including sedimentation, erosion, dust, noise, traffic, and potential water table contamination. If required by local authorities, removal will follow similar mitigation measures as during construction. Preventative measures to avoid accidental fuel leakage and soil compaction by on-site equipment will also be enforced, following the same procedures outlined for the construction phase.

9.7.52. **Residual Impacts**

9.7.53. The EIAR states that after implementing mitigation measures, the residual impact on the receiving environment will be imperceptible during construction and operation. Continuous monitoring of mitigation effectiveness will occur throughout all project phases.

9.7.54. Furthermore, the EIAR anticipates that the project will not significantly contribute to negative cumulative environmental effects in relation to existing or planned developments nearby. However, slight residual cumulative effects may arise from using local quarries for fill material excavation and disposal of unsuitable material, which could affect existing quarries and licensed facilities' void space during construction.

9.7.55. **Cumulative Impacts**

9.7.56. The EIAR acknowledges that the demand for engineered fill from source quarries, especially when coinciding with other nearby wind farm developments like Lackareagh and Carrownagowan, will lead to a slight cumulative impact due to increased demand on local quarries for aggregate.

9.7.57. During the operational and decommissioning phases, the EIAR does not expect significant negative cumulative effects, and thus, no specific mitigation measures are required for these phases. The report details the residual impact significance for sensitive geological and hydrogeological attributes across different project phases, as shown in Tables 9-17 and 9-18. It notes that potential impacts, such as increased erosion from felling activities, soil compaction, and the risk of groundwater contamination from construction activities, are expected to be reduced to an

imperceptible level post-mitigation. The sensitivity of the local bedrock aquifer and groundwater wells to these activities is moderate, and with mitigation measures, any adverse effects are anticipated to be negligible.

9.7.58. **Conclusion**

9.7.59. In the process of examining the proposed development's impact on land, soil and geology, as detailed above, my assessment considers the direct and indirect effects of the proposed project. Aspects considered include the likelihood, significance, and impact of identified likely significant effects on land, soil and geology. My assessment also considers cumulative effects which may arise from interaction between the various impacts within the project and all of the different existing and/or approved projects in the same area as the proposed development.

9.7.60. I note and have taken into consideration the issues raised in the Planning Authority report, and internal technical reports referred to therein as detailed in Sections 3.2 and 3.3 above. I have also taken into consideration the issues and concerns raised in the observations received, as detailed in Section 6.3 and the submissions from Prescribed Bodies, as detailed in Section 3.4.

9.7.61. Tree felling and earthworks during construction are likely to cause soil erosion and sedimentation, with high short-term significance; long-term effects hinge on mitigation success. Mitigation strategies, such as silt protection controls and runoff management, are critical for protecting the locally important aquifer. I consider these measures, if executed properly, will significantly curtail risks of erosion and contamination.

9.7.62. The operational phase is expected to cause minimal soil disturbance, with robust containment strategies for potential oil leaks. Decommissioning will involve reinstating silt controls, which I view as a sensible continuation of mitigation efforts. Earthworks will influence the land through soil compaction, erosion, and possible contamination; however, the EIAR indicates that these impacts, while moderate to slight, can be effectively mitigated through careful management and phased construction overseen by geotechnical experts.

9.7.63. The EIAR's mitigation strategies for soil stability, particularly during construction, will significantly reduce direct risks associated with soil instability. The operational and decommissioning phases are projected to have minimal impact, with additional

measures in place to preserve soil stability and prevent soil and groundwater contamination.

9.7.64. For internal access roads and other infrastructure, the EIAR indicates manageable risks with 'Small Adverse' impacts before mitigation. Mitigation measures, as detailed, would significantly reduce adverse effects. As for internal cabling and the grid connection, I find the EIAR's approach thorough, with a low likelihood of significant impact and 'Small Adverse' to 'Negligible' effects, which proper implementation of mitigation strategies should address effectively.

9.7.65. In conclusion, it is my view that the detailed mitigation strategies outlined in the EIAR will prevent significant adverse effects on land, soil, and geology. The thorough assessment and proposed measures for the turbine delivery route further reinforce this stance. Overall, I consider that adherence to these measures will ensure the project’s impact on soil stability will be managed to a level that would not pose significant environmental concerns.

9.8. Hydrology and Water Quality

9.8.1. Methodology

9.8.2. The EIAR provides a detailed examination of hydrology and water quality through a combination of desk and field studies. The desk study utilised Ordnance Survey Ireland maps, the Water Framework Directive's data, and historical records to assess flood risks, catchment characteristics, and to understand the site's geological and environmental context. Field surveys conducted in August 2022 complemented these findings by documenting hydrological features such as channel dimensions and surface drainage, with Appendix 10-1 offering a comprehensive photographic record.

9.8.3. The evaluation criteria for hydrological impacts, outlined in Table 10.2, consider receptor sensitivity, ranging from 'Very High' for rare and vulnerable receptors to 'Negligible' for those of low environmental importance. The Bridgetown River and Doon Lough are designated 'high' sensitivity due to their conservation status.

9.8.4. Consultations with Inland Fisheries Ireland, Irish Water, and the Department of Tourism, Culture, Arts, Gaeltacht, Sports, and Media informed the EIAR's approach to preserving hydro-ecological integrity. Inland Fisheries Ireland highlighted the

necessity of avoiding in-stream works during spawning seasons and recommended sediment control measures like settlement ponds and silt traps. Irish Water emphasized the importance of coordinating with their infrastructure, while the Department stressed evaluating peatland and wetland disturbance risks, along with detailed management plans for excavated materials.

9.8.5. **Existing Environment**

9.8.6. The EIAR for the Fahy Beg Wind Farm outlines the site's hydrological context within the Water Framework Directive classifications, identifying the Lower Shannon and Shannon Estuary North catchments as relevant hydrological areas. It details the sub-catchments of Bridgetown and Broadford as critical receptors. The EIAR specifies the site's hydrology is characterised by two catchments in the Irish River Network, noting the wind turbine locations within these catchments—T1 and T2 in the Broadford_010 sub-basin, and T3 to T8 in the Bridgetown (Clare)_010 sub-basin.

9.8.7. The topography of the wind farm site is described as mountainous, affecting drainage patterns and turbine placement. The EIAR notes turbines T5 and T7 are positioned at the highest elevations, with T1 at the lowest. Key hydrological receptors, such as the Black and Fahy streams, originate or run near the wind farm, draining into significant rivers like the Bridgetown and Lower Shannon.

9.8.8. The EIAR presents a thorough mapping of waterbodies and potential hydrological receptors impacted by the wind farm's construction and operation, identifying several streams and rivers as receptors. These include the Kilroughil and Black streams, Fahy stream, an unnamed stream near T4, and the Bridgetown and Lower Shannon Rivers. Within the Shannon Estuary North catchment, the Broadford stream and an unnamed downstream receiving river connected to the Doon Lough NHA are also identified as receptors.

9.8.9. The EIAR states that the Fahy Beg Wind Farm's average annual rainfall is likely higher than Shannon Airport's long-term average of 978 mm due to elevation, with significant storm events (M5-60) expected to deliver 15.8 mm of rainfall in 60 minutes. No natural lakes or reservoirs exist within the site; however, a man-made surface water body is present, resulting from quarry activities. The wind turbines are placed at least 75 meters away from any surface water receptor, ensuring adherence to environmental regulations, as illustrated in Figure 10-2 of the EIAR.

9.8.10. Historically, no flooding events have been recorded at the wind farm site or along the proposed cable route, with the nearest flooding south of R466. The EIAR emphasizes the importance of managing flood risks during construction, particularly for the turbine delivery route.

9.8.11. Surface water quality within the Lower Shannon catchment has improved, with the Bridgetown River shifting from Moderate to Good status and not being at risk. The EIAR notes most water bodies in the GCR maintain a Good ecological status, except for the North Ballycannan, which is rated Moderate and 'At Risk'. Biotic Indices or Q Values, with the Broadford sub-basin's recent ratings indicating slightly to moderately polluted conditions (Q3-4). The EIAR includes Table 10-7, which presents both historical and current biological water quality ratings for various stations within the Broadford sub-basin.

9.8.12. The EIAR assesses the ecological surroundings of the Fahy Beg Wind Farm and the Greater Catchment Region (GCR). Although the wind farm and GCR are outside designated protected areas, significant habitats nearby include:

- The Lower Shannon Special Area of Conservation (SAC), 3.9 km downstream, with species listed in the EU's Habitats Directive.
- Doon Lough Natural Heritage Area, 6 km downstream, noted for its rare, raised bog habitat and hydrological connection to the wind farm via the Broadford stream.
- Slieve Bernagh Bog SAC, 1.5 km north, with various peatland habitats but no hydrological link to the site.
- Glenomra Wood SAC, 600 meters from the GCR, with diverse woodland and upstream from the GCR.

9.8.13. Land within the wind farm site is used for forestry and agriculture, featuring conifer woodland, agricultural grassland, and an operational quarry with diverse habitats. The site's rural nature means formal drainage systems are minimal, with natural runoff management. Existing roads and access tracks manage surface water via natural absorption or evaporation, aided by drainage channels and culverts at stream crossings. The proposed grid connection route runs along public highways with formal drainage or natural runoff to verges, and the turbine delivery route crosses several watercourses, with additional details in the construction methodology report by TLI

Group in Appendix 3.3. Further information on protected sites providd in the EIAR's Biodiversity Chapter 8.

9.8.14. **Potential Impacts**

9.8.14.1. ***Do Nothing Impact***

9.8.15. The EIAR states that if the project is not undertaken, the site will continue to be used for its current purposes, which include forestry and agriculture, into the foreseeable future. The EIAR details that the hydrological conditions of the site would maintain their current state as described in the baseline characterisation.

9.8.15.1. ***Potential Impacts During Construction***

Unmitigated Increase in Surface Runoff

9.8.16. The EIAR evaluates the likely increase in surface runoff from its development and infrastructure without mitigation. It notes construction will lead to more runoff due to land changes, affecting nearby water bodies, particularly the Lower River Shannon SAC and Doon Lough NHA. This impact is seen as direct and negative but reversible, with moderate significance given the infrastructure's small size and minor runoff increase. Mitigation strategies will be applied to slow runoff, aiming to replicate pre-development conditions and minimise impact. No additional runoff is expected from the GCR, as surface alteration is minimal. The TDR's hydrological impact is deemed not significant due to the use of existing roads and temporary, minor vegetation changes.

Suspended Solids

9.8.17. The EIAR identifies several construction activities at the Fahy Beg Wind Farm that could result in higher suspended solids levels, potentially affecting local watercourses. These activities include soil disturbance from standing water in excavations, silt migration from haul roads, vehicle transport of silt, potential drain blockages, increased excavation water volume, improper excavation management, inadequate storage of excavated material, and inflows to turbine base excavations.

9.8.18. The EIAR details that the primary conduits for these suspended solids are the site's drainage and surface water discharge routes, with the Lower River Shannon SAC and

Doon Lough NHA identified as receptors. The pre-mitigation impact of these solids is classified as direct, negative, short-term, and likely, with a significant potential to increase turbidity and negatively affect water quality, aquatic life, and fish stocks downstream, especially during salmon spawning. The significance of this impact is deemed "Significant" due to the vulnerability of the water bodies and the high likelihood of such events occurring, despite observations from an EcoFact aquatic survey indicating spawning habitats are not prevalent at the wind farm site.

Release of Cement-Based Products

9.8.19. The EIAR indicates that cement-based products used during the construction of Fahy Beg Wind Farm have the potential to contaminate nearby water bodies due to their high pH and corrosivity. These products could enter waterways through the site drainage network, affecting aquatic life by causing skin burns or gill blockage in fish. Despite these risks, the pre-mitigation impact of cement-based product release is considered indirect, negative, brief, and unlikely, suggesting a low probability of occurrence without mitigation measures. The highest risks come from wet concrete operations and machinery washout, with the EIAR considering the significance of the effect on water bodies as moderate. Adhering to best practice pollution prevention measures is expected to mitigate these risks effectively.

Release of Hydrocarbons

9.8.20. The EIAR details potential risks of hydrocarbon release during construction activities at the Fahy Beg Wind Farm. It notes the dangers of fuel spillages from refuelling activities and storage tanks, which could impact both groundwater and surface water. Construction of new watercourse crossings may have a beneficial effect by lessening vehicle-related oil and grease pollution. However, the use of heavy machinery in tree felling poses risks of contaminating watercourses with fuels and hydrocarbons.

9.8.21. Hydrocarbons may reach environmental receptors via the site drainage network and groundwater paths, affecting surface and groundwater. The EIAR describes the pre-mitigation impact of hydrocarbon release as direct and negative but temporary, with a low likelihood of occurrence. Given hydrocarbons' high toxicity to aquatic life and potential to deplete dissolved oxygen in water, the EIAR categorises the significance of such a release as moderate due to the typically small quantities involved in incidents and the low probability of occurrence.

Contamination from Wastewater

9.8.22. The EIAR details the potential for biological contamination from sanitary waste at the Fahy Beg Wind Farm, originating from possible leaks in welfare units provided for workers. It notes that the site drainage network could spread such contamination, with surface water bodies down gradient of the site being at risk. However, the pre-mitigation impact is considered indirect, negative, temporary, and unlikely, indicating a low probability with effective management and mitigation strategies. The EIAR describes the impact of any potential release of domestic wastewater effluent on surface water quality as "Not Significant," based on the responsible placement and maintenance of the welfare facilities, as shown in Figure 3-2 of the EIAR.

GCR Cable Installation and Horizontal Directional Drilling (HDD)

9.8.23. The EIAR details risks associated with the grid connection route of the Fahy Beg Wind Farm, particularly the environmental risks from construction activities. It notes potential issues such as siltation from suspended solids, soil mobilization during heavy rainfall, silt-laden runoff from trench excavation for cable laying, contamination from improperly stored fuels and oils, fuel spillage during refuelling, erosion of riverbanks impacting fisheries habitat, and pollution from drilling fluids like bentonite used in Horizontal Directional Drilling (HDD) at four locations.

9.8.24. These activities could lead to increased turbidity and negatively impact water quality, aquatic ecosystems, and fish stocks downstream. The primary pathways for these impacts are identified as surface water discharge routes or HDD breakout, with water bodies down gradient from the GCR and HDD sites being the receptors.

9.8.25. The pre-mitigation impact of suspended solids is deemed direct, negative, and temporary, with a low probability of occurrence, and the significance of their release into receiving waters is labelled 'Slight'. For hydrocarbon pollution risks from construction machinery leakage, the pathways are the site drainage network and groundwater flow paths, with the significance of hydrocarbon release into receiving waters considered 'Not Significant'. This assessment reflects the low likelihood of substantial releases and the minimal hydrological connection between the grid connection and sensitive areas like the Glenomra Wood SAC.

9.8.25.1. ***Potential Impacts Associated with Turbine Delivery Route Works***

9.8.26. The EIAR states that there is a potential risk of hydrocarbon pollution during the delivery of turbines along the Turbine Delivery Route (TDR). The TDR will utilise existing roads, which will cross sensitive areas such as the Lower Shannon River SAC just south of Killaloe. The EIAR puts forward that the significance of hydrocarbon release into the receiving waters is 'Not significant' due to the low probability of such incidents and the small quantities of hydrocarbons that would be involved. The EIAR notes an increase in risk to 'Moderate' at the crossing point of the SAC, owing to the area's high environmental sensitivity. However, the short travel time over the SAC and the existing road infrastructure contribute to a low likelihood of spillage.

9.8.26.1. ***Potential Impacts During Tree Felling***

9.8.27. Approximately 14.2 hectares of forestry will be permanently felled within the main wind farm site to make room for turbine hardstands, access tracks, and biodiversity enhancements. The EIAR describes the tree felling as being confined to specific areas around the proposed infrastructure, including a buffer around turbine hardstandings, corridors for access tracks, areas around each turbine tower for bat impact mitigation, and for the transition from coniferous to broadleaf woodland. The report indicates that tree felling operations are expected to last approximately 8 weeks. The EIAR details that tree felling could lead to the release of suspended sediment and nutrients into surface water bodies, especially if felled trees are left in place. The EIAR posits that the unmitigated release of nutrients into receiving waters would have a 'Moderate' significance due to the high likelihood of occurrence and the short-term nature of the effect. Tree felling activities are highlighted as having the potential to negatively impact the water quality of downstream receiving watercourses, including sensitive areas like the Doon Lough NHA and the Lower Shannon River SAC.

9.8.27.1. ***Potential Impacts During Operation and Maintenance***

9.8.28. The EIAR describes site access by vehicle and foot as the principal sources of potential environmental impact during the operation phase. Pollution from spills and leaks of fuel, oil, and chemicals from vehicles and during maintenance activities is considered a potential risk. Transformer oil used in cooling the facility's transformers is identified as a potential source of oil spills during replacement activities or from leaks throughout the operational phase. Although there is a recognised potential for oil spills,

the EIAR indicates that the likelihood of such an event is low. The report posits that there is no significant risk of sediment release that could lead to increased suspended solids in surface waters during the operational phase since there will be no vegetation disturbance. It also notes that large wind turbine component replacements are highly unlikely during the operational phase, suggesting that the Turbine Delivery Route (TDR) will not be affected during this time.

9.8.29. Identified pathways and mechanisms for potential contamination include the site drainage network and surface water bodies. The receptors of such potential impacts are the surface water bodies in the vicinity of the wind farm site. The EIAR details that the pre-mitigation impact is indirect, negative, short-term, and unlikely, indicating that effective mitigation measures can likely manage these risks. The EIAR states that the significance of the effect of hydrocarbon release into receiving waters is 'Not Significant' due to the low likelihood of occurrence and the minimal quantities involved.

9.8.29.1. ***Potential Impacts During Decommissioning***

9.8.30. The EIAR outlines that wind turbine deconstruction at Fahy Beg Wind Farm will involve disassembling with cranes, and the infrastructure will be re-vegetated rather than fully removed for less environmental disruption. Post-decommissioning, certain elements like access tracks and electrical infrastructure will remain. It notes low likelihood of significant sediment or hydrocarbon release during this phase, with potential impacts deemed slight due to minimal ground disturbance and quantities involved.

9.8.30.1. ***Potential Impacts from Flooding***

9.8.31. The EIAR indicates that flooding could harm substation structures and disrupt wind farm operations, with potential safety risks for on-site personnel and impassable access tracks. It details that the development could increase surface water runoff due to more impermeable surfaces, enhancing off-site flood risks. It also points out the reduction in flood storage capacity when construction in flood plains occurs, affecting natural flood mitigation. Additionally, the EIAR suggests that new structures and altered ground levels may alter flood flow routes, raising downstream flood risks and potentially mobilizing sediments and pollutants in runoff from the site.

9.8.31.1. ***Potential Cumulative Impact***

9.8.32. The EIAR details that while there is a theoretical possibility of exceeding Environmental Quality Standard thresholds due to combined runoff from developments like wind farms, in practice, these significant effects are rare due to stringent regulation and effective management techniques. The EIAR notes that cumulative effects are considered significant only if construction stages of different developments within the same catchment overlap. Specifically, the EIAR posits that, for the Fahy Beg Wind Farm, potential cumulative impacts might arise with the Carrownagowan Wind Farm and its Grid Connection Route (GCR), especially during construction when watercourses are crossed.

9.8.33. The EIAR describes the Carrownagowan Wind Farm (ABP Ref. 303105-18) as a larger development, with 19 wind turbines proposed near Slieve Bernagh in County Clare, within the same larger catchment area as Fahy Beg Wind Farm, though in a different sub-catchment. The EIAR indicates that although the wind farms drain into different rivers, they both ultimately affect the Doon Lough Natural Heritage Area. The EIAR puts forward mitigation strategies to minimise the cumulative impact on the water environment, such as coordinating construction efforts for the overlapping sections of the GCR for both wind farms and following best practices to restore roads and verges to their previous condition after laying the cable.

9.8.34. **Flood Risk Identification and Assessment**

9.8.35. Regarding flood risk, the EIAR describes the site's diverse topographical features, noting its spread across the Lower Shannon and Shannon Estuary North River catchments. It clarifies that the location, spanning the Shannon (Lower) and Owengarney sub-catchments, is not prone to high, medium, or low fluvial flooding under current or projected future conditions, as evidenced by the CFRAM fluvial flood mapping and the Geological Survey Ireland's data.

9.8.36. The EIAR proposes the construction of eight wind turbines on 25-meter diameter concrete foundations, positioned strategically in the northern and eastern higher elevation areas, to mitigate flood risks. Access to the site is planned to be improved by upgrading 1.4 km of existing paths and constructing 7.2 km of new tracks using environmentally sensitive construction practices, such as uncrushable stone and geogrids for peat stability. The EIAR emphasises that these paths are designed to

minimise environmental impact, with aluminium access trackways during construction to protect against excess mud and sediment.

9.8.37. The proposed Grid Connection Route (GCR) is described as a 10.6 km path, avoiding significant flood risk zones and employing construction methodologies such as Horizontal Directional Drilling to minimise interactions with flood plains. The EIAR indicates that even where the GCR intersects with medium probability flood zones, the construction techniques and restoration efforts post-installation will ensure no adverse impacts on flood storage capacity or flow routes.

9.8.38. The EIAR outlines a comprehensive Surface Water Management Plan, incorporating Sustainable Drainage Systems (SuDS) to manage and mitigate increased runoff and potential water quality impacts during all project phases. It anticipates a 20-30% increase in rainfall intensity due to climate change and confidently proposes mitigation measures, such as interceptor drains, swales, settlement ponds, and check dams, to manage the additional water volume and safeguard downstream areas.

9.8.39. For watercourse crossings, the EIAR proposes to construct bridges and culverts in accordance with the National Roads Authority's guidelines, ensuring they accommodate increased flow rates and additional climate change allowances. It indicates that these crossings, sized to handle a 1 in 100-year flood event plus an extra 20% for climate change, will not impact the flow within the watercourses, thus preserving the integrity of the environment and mitigating flood risk. The careful sizing and design of the crossings, as stipulated in the EIAR, ensure that the construction and presence of the wind farm do not exacerbate flood hazards in the surrounding areas. The EIAR further reinforces this by specifying that box culverts will be embedded into the stream bed to align with natural conditions, and piped culverts will manage minor drains, all designed to accommodate significant flood events and climate projections.

9.8.40. The EIAR also details the drainage strategy for the internal areas of the main wind farm site, focusing on the use of Sustainable Drainage Systems (SuDS) to manage runoff. Interceptor drains are planned to route overland flows around constructed areas, and vegetated swales will provide attenuation and treatment for surface water runoff. Settlement ponds are described as integral to the SuDS approach, though the EIAR does not elaborate on their specific design within the provided text. These ponds

are crucial for managing water quantity and improving quality by allowing sediments to settle.

9.8.41. In terms of existing tracks and surfaced roads, the EIAR emphasises that the drainage will be realigned or replaced to maintain current flow rates and capacities when tracks are widened. The use of clean, uncrushable aggregate for track widening aims to facilitate water infiltration, thus reducing runoff rates. The EIAR underscores the importance of a proactive drainage strategy during the construction phase to prevent sediment from entering watercourses, with silt traps and check dams incorporated into the design.

9.8.42. The EIAR posits that, with the implementation of these carefully considered drainage and construction measures, the proposed development will effectively manage surface water. It asserts that the risk of surface water flooding to off-site areas will not increase, aligning with the OPW's strategic approach for minimizing flood risks. Moreover, the EIAR's planning for climate change impacts, with allowances for increased rainfall and peak flows, demonstrates foresight and an understanding of the potential for more extreme weather events.

9.8.43. The EIAR elaborates on the drainage systems for temporary site compounds and the substation, which include measures to intercept and naturally disperse runoff from undeveloped areas. Runoff from developed areas will be managed through SuDS, like vegetated swales leading to settlement ponds, with additional pollution control measures such as Class 1 Full Retention Oil Interceptors to prevent any contaminants from entering natural watercourses.

9.8.44. The EIAR provides assurance that the wind farm site's proposed drainage infrastructure is robust and designed to effectively manage surface water throughout the lifecycle of the wind farm, thereby protecting water quality and mitigating any potential increase in flood risks. It is my view that the EIAR demonstrates a comprehensive approach to sustainable water management, reflecting a strong commitment to flood risk mitigation.

9.8.45. **Proposed Mitigation Measures**

9.8.46. The EIAR puts forward a mitigation strategy to ensure that the proposed development does not negatively impact water quality downstream.

9.8.47. For water quality, the EIAR prescribes a Surface Water Quality Monitoring Programme to be initiated a year before construction. This program will record baseline water quality data, such as pH, alkalinity, ammonia, phosphorus, nitrogen, organic carbon, and oxygen demand, against established European water quality thresholds.

9.8.48. During construction, the EIAR specifies a set of practices to minimize water quality impacts. These include off-site refuelling to prevent hydrocarbon pollution and on-site refuelling protocols with containment measures. The EIAR also mentions controlled fuel usage and bunded storage areas for fuels and oils. It highlights the relatively small infrastructure footprint of turbine foundations as an inherent design mitigation measure, which will reduce land use changes and associated runoff. These measures are detailed within the Construction Environmental Management Plan (CEMP) and the Surface Water Management Plan (SWMP).

9.8.49. For instream works, the EIAR requires that machinery be mechanically sound to prevent oil and fluid leaks. Temporary stream diversions will adhere to NRA guidelines and be protected by vegetative buffers, silt fencing, and bog mats to prevent erosion and sedimentation. Construction near watercourses will be carefully managed to prevent contamination, utilizing dry working conditions and cofferdam techniques.

9.8.50. The EIAR details measures for the Grid Connection Route (GCR), which include best industry practices for cable installation, emphasizing minimal soil disturbance and prompt revegetation. Tree felling will follow environmental guidelines, with buffer zones established to protect ecosystems.

9.8.51. For the operational and maintenance stage, the EIAR introduces a Surface Water Management Plan featuring SuDS components such as interceptor drains, swales, and settlement ponds. These are designed to filter runoff, promote infiltration, and contain pollutants. Regular maintenance and monitoring will ensure the longevity of these systems.

9.8.52. In addressing decommissioning, the EIAR suggests a minimal-change approach, leaving infrastructure like access tracks in place to reduce disturbance, with a focus on erosion control and revegetation.

9.8.53. Regarding flood mitigation, the EIAR outlines the construction of aggregate access tracks and swales to enhance infiltration and manage runoff. Settlement ponds are designed to accommodate significant storm events, and watercourse crossings will be

sized to handle increased flows. The EIAR assures that these measures, coupled with proper construction and restoration techniques, will manage the increased runoff effectively, preventing any augmentation of flood risk to downstream areas.

9.8.54. **Residual Impacts**

9.8.55. The EIAR evaluates potential impacts across all project stages and implements mitigation measures to ensure these impacts remain non-significant.

9.8.56. During the construction stage, despite potential pre-mitigation impacts like increased surface runoff, the release of pollutants into surface water, and wastewater contamination, the EIAR outlines mitigation strategies to protect sensitive receptors such as the Lower Shannon River SAC and Doon Lough NHA, ensuring residual impacts are minimised.

9.8.57. For the operation and maintenance phase, the EIAR considers the unmitigated impact to be not significant but nevertheless recommends ongoing visual and water quality monitoring as a precaution. The risk of hydrocarbon runoff into surface water bodies, although deemed not significant post-mitigation, is also addressed through these measures.

9.8.58. In the decommissioning phase, the EIAR anticipates similar potential impacts as the construction stage but again confirms that the implementation of the outlined measures will effectively ensure that residual impacts do not negatively influence sensitive areas. The comprehensive approach demonstrated in Section 10.7 of the EIAR is designed to maintain the environmental quality of the Lower Shannon River SAC and Doon Lough NHA throughout the lifespan of the wind farm.

9.8.59. **Conclusion**

9.8.60. In my assessment of the EIAR chapter on Hydrology and Water Quality, it is evident that the proposed project has been comprehensively analysed for potential hydrological and water quality impacts, encompassing both direct and indirect, as well as cumulative effects. The EIAR recognises the likelihood and significance of increased surface runoff, suspended solids, cement-based product contamination, and hydrocarbon release, particularly during construction. Despite the moderate to

significant pre-mitigation impacts, extensive mitigation measures are proposed to manage and minimize these effects to non-significant levels.

9.8.61. The EIAR's approach is multifaceted, incorporating baseline condition monitoring and construction and operational management plans, including a Surface Water Management Plan and a Construction Environmental Management Plan. Mitigation strategies are well-considered, with a focus on reducing runoff through controlled refuelling, sound machinery operation, and construction techniques that respect the existing landscape and hydrological patterns. These measures are complemented by a robust monitoring regime to ensure continued compliance and adaptation to observed conditions.

9.8.62. During the operation, maintenance, and decommissioning stages, the likelihood of significant impact from hydrocarbon or sediment release is low, with ongoing management strategies designed to maintain the integrity of water bodies, including the Lower Shannon River SAC and Doon Lough NHA.

9.8.63. The EIAR effectively addresses the potential for cumulative impacts through careful planning and coordination with other projects, ensuring that the overall integrity of the hydrological system and water quality is preserved. The EIAR's commitment to regular inspections, maintenance routines, and adherence to regulatory guidelines further reinforces the robustness of the mitigation strategy.

9.8.64. In conclusion, it is my view that the EIAR presents a comprehensive and effective set of mitigation measures that would prevent significant adverse impacts on hydrology and water quality throughout the lifecycle of the proposed wind farm project.

9.9. Population, Human Health and Material Assets

9.9.1. The EIAR provides a detailed examination of the potential impacts on population through various phases of the project. The EIAR states that the construction phase will temporarily increase the local population due to the influx of construction workers. Despite creating an estimated 39 to 44 jobs, this impact is expected to be neutral and transient as workers are unlikely to permanently relocate to the area. Indirect effects during the operational phase are anticipated due to the creation of 9.4 to 15.4 long-term jobs. However, these effects are expected to be minimal with a slight temporary increase in population during working hours, which will not significantly alter population

trends. The likelihood of direct effects occurring is high during the construction and decommissioning phases but is expected to be imperceptible during the operational phase. The indirect effects are also likely but are predicted to be minimal and temporary. The significance of the direct effects on population during the construction and decommissioning phases is considered low due to their temporary nature. Indirect effects during the operational phase are also deemed to have low significance, with no substantial change to the population trends expected.

9.9.2. Based on the evidence presented in the EIAR, it is my view that the proposed development would not significantly affect the local population in the study area. The temporary and limited scale of the construction and decommissioning workforce will not lead to a lasting change in the population size or composition. The slight increase in population during operational hours is within the capacity of the existing community and services to accommodate without significant impact. The provision of long-term employment is modest and unlikely to drive substantial demographic change. The rural and sparsely populated nature of the study area provides a buffer against the potential for significant population impacts. The absence of evidence for substantial cumulative effects indicates that the development will not lead to significant population changes.

9.9.3. **Socio-Economics, Employment and Economic Activity**

9.9.4. The EIAR indicates a significant direct boost to employment in the study area due to the project, with the construction phase predicted to create between 33.4 and 123 jobs based on varying estimates from different authoritative sources. This will provide substantial employment opportunities locally and aid the socio-economic development within the study area. The EIAR specifically mentions the types of jobs and the potential for local materials sourcing, which would support the local construction industry and benefit tradespeople and laborers.

9.9.5. The project's operational phase is projected to offer long-term employment, with estimates ranging from 9.4 to 15.4 jobs, which may not be directly located at the wind farm site but will have ripple effects in the surrounding economy. The increased activity during construction and operation phases will likely lead to heightened demand for local services and goods, thus indirectly benefiting the local economy. Additionally, the payment of rates and development contributions by the developer will enhance the capacity of local authorities to improve services. Given the data and projections in the

EIAR, it is my view that there is a high likelihood that the direct and indirect positive socio-economic and employment effects outlined would materialise.

9.9.6. The EIAR characterises the positive impacts on employment and local economic activity as significant. The construction phase alone presents a substantial immediate economic stimulus, while the operation of the wind farm promises sustained economic contributions. Notably, the Community Benefit Fund under the Renewable Energy Support Scheme (RESS) is set to channel considerable funds into community development, further reinforcing the long-term socio-economic benefits.

9.9.7. When considering cumulative effects, the wind farm's positive impacts on socio-economics and employment would be compounded when viewed in the context of other existing or forthcoming projects. The project's benefits and other developments would foster an even more robust socio-economic environment in the study area and beyond.

9.9.8. In consideration of the above, it is my view that the proposed development would significantly and positively influence the socio-economic conditions and employment landscape in the study area and County Clare. The project would deliver direct employment, stimulate economic activity, and contribute to long-term community and infrastructural development through substantive financial contributions. These effects, in tandem with the advancement of renewable energy goals and the reduction of fossil fuel dependence, substantiate a comprehensive positive socio-economic impact. I conclude therefore the proposed development would have no significant negative socio-economic consequences.

9.9.9. **Land Use**

9.9.10. The EIAR indicates that the construction and operation of the wind farm will directly alter the land use within the site. The construction phase will temporarily disrupt existing forestry and agricultural lands due to the necessity of creating access tracks and the location of turbines. The operational phase will change land use from forestry and agriculture to wind farm use, with a slight negative impact due to the removal of grazing land and forestry. Indirect effects could include changes to local ecosystems due to the alteration of habitats, as well as potential changes in the local community due to the presence of the wind farm. While the EIAR posits negligible indirect effects from activities such as alternative afforestation, there may be unanticipated

consequences on local biodiversity and the character of the area over time. The likelihood of the direct effects occurring is high, given the physical changes to the land that are integral to the construction and operation of the wind farm. The EIAR provides evidence supporting the inevitability of these alterations. Indirect effects are more uncertain but are reasonably expected given the scale of the project. The significance of the effects on land use will be moderate to low, depending on the perspective. From an environmental standpoint, the loss of forestry and alterations to agricultural land are significant, especially considering the duration of the wind farm's operational life. However, the project's commitments to mitigation and environmental management plans, including the Biodiversity Enhancement & Management Plan (Appendix 3.4) would reduce long-term impacts. Cumulatively, the project could contribute to a regional shift in land use patterns, especially when considered alongside other existing or approved wind farm projects. The interaction of the wind farm's impacts, such as habitat disruption, alongside those from other developments, could lead to compounded effects on local wildlife, landscape character, and community structure.

9.9.11. Having reviewed the proposed mitigation measures in the EIAR, it is my view that the proposed measures would minimise the impact on land use throughout the lifecycle of the proposed wind farm. I consider that the integration of existing forestry tracks into the project design would significantly reduce the need for additional land alterations and preserve the current land use to a greater and minimise environmental disruption. By limiting the construction of new tracks and utilising existing pathways, the proposal mitigates against extensive land use changes and the associated impacts. The installation of electricity cables would avoid the surface disturbance of forestry areas. The measures outlined in the Construction and Environmental Management Plan (Appendix 3.1) would provide a structured approach to managing environmental impacts systematically, ensuring that daily operations during construction and decommissioning are conducted in such a manner that the environment is protected and impacts on the environment are minimised. The employment of a community liaison officer would facilitate better communication and understanding between the project developer and the affected communities. This role is essential in mitigating the social impacts of the construction activities, especially those that affect access to lands. The TDR would be managed in a way that avoids undue impact on adjacent land uses.

9.9.12. In conclusion, I do not consider that the proposed wind farm, with the implementation of the described mitigation measures, would result in significant adverse effects on land use. The proposed mitigation measures are robust and, if implemented as described, would serve to prevent any substantial negative impacts, and safeguard the integrity of the local land use.

9.9.13. **Recreation, Amenity and Tourism**

9.9.14. The EIAR outlines the existing environment for recreation, amenity, and tourism in the region. Considering the region's strong tourism revenue and popular recreational activities like hiking and angling, the direct effects of the wind farm seem minimal. The EIAR indicates that the wind farm's location and operations have been designed to minimise visual intrusion, preserving the region's recreational and tourism appeal. It is my view that the direct effects of the proposed wind farm on recreation, amenity, and tourism would not be significant, as the project has been designed to integrate into the existing landscape without significantly disrupting the current tourist and recreational activities within the study and surrounding area.

9.9.15. The potential indirect effects, particularly during the construction phase include temporary disruptions in towns and villages due to the Turbine Delivery Route (TDR). While these effects are temporary and brief, they could impact town centre services and amenities. I consider that the indirect effects, though temporary, could slightly disrupt the usual flow of tourism and recreation activities in the affected settlements during the construction phase. The likelihood of the identified effects occurring seems high during the construction phase but is expected to be temporary and not significant. The operational phase, would not significantly impact tourism and leisure, given the wind farm's siting and location. I consider it likely that the construction phase will temporarily impact recreation and tourism activities in nearby towns and villages, but these effects are not significant.

9.9.16. The EIAR suggests a generally positive perception of wind farms, indicating minimal significance in the long-term effect on tourism and recreation. It is my that the likely effects of the proposed development on recreation, amenity, and tourism would be significant in the short-term during construction but minimal in the long-term during operation. The cumulative effects, especially in conjunction with other wind farm projects would not be significant, given the location of the proposed wind farm and its

distance from the other wind farms. The EIAR outlines mitigation measures in Chapter 13, focusing on traffic and transportation to minimise indirect impacts during construction and decommissioning. These measures would limit the disruption to recreation and tourism activities in nearby areas.

9.9.17. In consideration of the above, I conclude that the proposed wind farm development would not have a significant effect on recreation, amenity, and tourism.

9.9.18. **Human Health & Safety**

9.9.19. The EIAR outlines the direct effects on human health and safety. During the construction phase, it identifies a range of risks including site safety concerns with potential for slips, trips, and vehicle accidents, hazards associated with heavy lifting operations, risks from elevated workplaces, soil and ground instability, road safety challenges due to increased traffic, electrical installation dangers, air quality degradation, and noise pollution. Importantly, these risks are not confined to construction workers but extend to the general public, particularly in relation to road safety and potential air and noise pollution. The EIAR also addresses the operational phase, noting potential risks such as falling ice from turbine blades, operational safety issues for maintenance staff, and the negligible impact of electromagnetic fields. These insights reflect a comprehensive analysis of the direct risks associated with both the construction and operation of the wind farm.

9.9.20. The EIAR identifies possible indirect effects. Increased traffic volumes during construction and decommissioning phases could indirectly affect public health through altered road safety dynamics. Additionally, the presence of a large-scale construction project could induce psychosocial stress among local communities. Furthermore, economic impacts, whether positive or negative, can indirectly influence community health and well-being. These indirect effects, while not immediately apparent, form an important component of the overall impact assessment. In evaluating the likelihood of these effects, it's evident that the construction and decommissioning phases present a relatively higher risk due to the nature of heavy construction activities. These risks, however, are significantly mitigated by rigorous safety protocols. In the operational phase, the likelihood of risks materialising is substantially lower, particularly with the implementation of the proposed mitigation measures.

9.9.21. The significance of the impacts varies across different phases of the project. During construction and decommissioning, the impacts, particularly related to traffic and worker safety, are significant due to the involvement of heavy machinery and large-scale operations. However, in the long-term, during the wind farm's operational phase, these effects are considerably reduced and become less significant, especially when considering the mitigation strategies in place.

9.9.22. Regarding cumulative effects, the EIAR does discuss the project in isolation, and there seems to be a gap in the analysis of cumulative effects, especially when considering other existing or approved projects in the area. The cumulative impact of increased traffic and noise could be more pronounced and lead to compounded effects on human health and safety. Additionally, long-term environmental changes resulting from the project, such as alterations in local ecology or landscape, could indirectly impact human health over a more extended period. Notwithstanding this, the proposed mitigation measures outlined in the EIAR include comprehensive safety protocols, effective noise and traffic management strategies, and detailed emergency response plans. If these measures are implemented effectively, they would prevent significant adverse effects on human health and safety. The EIAR's emphasis on safety and environmental management, adherence to health regulations and legislation, implementation of a comprehensive Construction and Environmental Management Plan, rigorous training for construction staff and specific strategies for hazard identification and risk assessment are all appropriate measures in ensuring the safety and well-being of both workers and the public during the construction, operation, and decommissioning phases.

9.9.23. In consideration of the detailed analysis provided in the EIAR and the proposed mitigation measures, I conclude that the wind farm development, while presenting some inherent risks typical of such developments, is unlikely to have a significant adverse effect on human health and safety.

9.9.24. **Renewable, Non-Renewable Resources and Utility Infrastructure**

9.9.25. The direct effects on renewable resources are significantly positive. The proposed wind farm stands as a net provider of renewable energy, poised to contribute substantially to carbon reduction and climate change mitigation, aligning with Ireland's renewable energy targets as outlined in the Climate Action Plan 2023. This aspect is

crucial, considering the average wind resource at the site, which, while suitable for a wind farm, is not exceptional compared to other potential sites. Regarding non-renewable resources, the construction phase will slightly and permanently impact these, particularly stone resources used in construction. However, this impact is deemed imperceptible in the long term, as noted in the EIAR. The utility infrastructure, including a major 400KV overhead line, is expected to remain unaffected during construction, as activities are strategically planned to avoid these areas.

9.9.26. Indirect effects, including potential disruptions to transportation and telecommunications during turbine delivery, are anticipated. These disruptions, while temporary, could affect road infrastructure and cause brief disturbances in telecommunications. Additionally, construction activities will inevitably generate waste, but the project's adherence to the National Waste Management Guidelines is expected to minimise these impacts. The likelihood of the identified effects, based on the evidence provided in the EIAR, is high due to the nature of construction and operational activities. However, the implementation of effective mitigation measures is likely to reduce these impacts to a minimal or imperceptible level. The significance of these effects, considering both the scale and duration of the impacts, appears to be low to moderate. While there are permanent changes, particularly to non-renewable resources, these are offset by the substantial benefits of renewable energy production and the minimal impact on utility infrastructure. Cumulative effects, particularly in conjunction with other existing or approved projects in the area, are expected to be significantly positive. The project, along with other energy projects, is likely to enhance utility infrastructure and renewable energy resources, contributing to a national reduction in fossil fuel usage.

9.9.27. The proposed mitigation measures, including minimising disturbance to existing utility infrastructure, local sourcing of construction materials, comprehensive waste management plans, and effective communication with affected residents and businesses, are adequate and well-considered. These measures would ensure that the project's impact remains within acceptable limits.

9.9.28. In conclusion, it is my view that the proposed wind farm development would not have a significant adverse effect on renewable, non-renewable resources, and utility infrastructure. The benefits of renewable energy production and the minimal long-term impacts on non-renewable resources and utility infrastructure, coupled with the

proposed mitigation measures, support this conclusion. The project, therefore, presents a net positive impact, with the mitigation strategies outlined in the EIAR being sufficient to manage and minimise any potential adverse effects.

9.10. Shadow Flicker

9.10.1. The EIAR provides a thorough analysis of Shadow Flicker's direct effects, focusing particularly on the affected receptors within the study area. The EIAR's study area for shadow flicker is set at 1380 meters from each of the 8 wind turbines, aligning with the Wind Energy Guidelines (2006) recommendation of considering a maximum distance of 10 times the rotor diameter (138m).

9.10.2. The EIAR identifies 65 sensitive receptors within the 1380-meter study area. The closest receptor is situated at a distance of 719 meters from the nearest wind turbine. The shadow flicker model estimates the total theoretical hours per year that each receptor could receive shadow flicker. However, this theoretical model does not account for weather conditions, which can significantly impact the actual occurrence of shadow flicker. By considering annual average sunshine hours for the region, the EIAR provides a more realistic estimate of shadow flicker exposure. This adjustment leads to a prediction of 'likely' levels of shadow flicker for each scenario.

9.10.3. The Wind Energy Development Guidelines 2006 recommends that shadow flicker should not exceed 30 hours per year or 30 minutes per day at neighbouring offices and dwellings within 500 meters. According to Table 12-3 in the EIAR:

- Scenario 01: 16 receptors may exceed the recommended annual limits based on maximum theoretical hours, but only 1 receptor exceeds these limits under the 'likely' scenario. Also, 17 receptors may experience shadow flicker beyond the maximum theoretical minutes per day.
- Scenario 02: 14 receptors might exceed the annual recommended limits based on maximum theoretical hours, but none exceed these limits in the 'likely' scenario. 16 receptors could experience shadow flicker beyond the daily recommended maximum.
- Scenario 03: Similar to Scenario 01, 16 receptors may exceed annual recommended limits in terms of maximum theoretical hours (reduced to 1 in the 'likely' scenario), and 17 receptors might exceed the daily limits.

9.10.4. The EIAR opts for a conservative approach, calculating daily impacts based on the maximum theoretical amount of shadow flicker. This method does not apply the annual average sunshine hours correction to daily totals due to the insufficiency of monthly average sunshine data for accurate daily predictions.

9.10.5. The EIAR's findings indicate that under theoretical conditions, a significant number of receptors may experience shadow flicker exceeding the WEDG 2006 recommended limits. However, when considering more realistic conditions (the 'likely' scenarios), the number of receptors exceeding the annual recommended limits substantially decreases. This suggests that the actual impact of shadow flicker, while potentially significant in a theoretical model, is much less severe under realistic conditions.

9.10.6. The proposed mitigation measures to address shadow flicker effects on nearby receptors include shadow flicker control modules, equipped with light sensors and specialised software. These modules will actively monitor environmental conditions to prevent turbine operation during periods likely to produce shadow flicker. The system calculates potential shadow flicker periods, feeding this data into the turbine control software. When conditions such as sufficient light intensity and correct turbine orientation are met, the turbines will temporarily cease operation. The shutdown process of the turbines is gradual, relying on the reaction time of the control modules and specific turbine characteristics. This ensures a smooth transition and minimises any residual impact. For all scenarios considered in the EIAR, a mitigation strategy is incorporated into the turbine control software, aiming to eliminate shadow flicker within the study area. The system's flexibility allows for adjustments based on actual turbine specifications, ensuring the effectiveness of these measures. The accords with the 2006 Guidelines which requires that where shadow flicker could be a problem, developers should, where appropriate, take measures to prevent or ameliorate the potential effect, such as by turning off a particular turbine at certain times.

9.10.7. Having regard to the foregoing, it is my view that the design of the proposed wind farm and proposed mitigation measures demonstrates the proposed development will effectively minimise or prevent shadow flicker at identified receptor properties within the study area. The implementation of shadow flicker control modules, which cease turbine operation during conditions conducive to shadow flicker, accords with the Wind Energy Development Guidelines (2006). This approach would ensure a significant

reduction in potential shadow flicker impacts and minimising its impact on the surrounding community.

9.11. Traffic and Transportation

9.11.1. In the process of examining the proposed development's impact on traffic and transportation, as detailed above, my assessment considers the direct and indirect effects of the proposed project. Aspects considered include the likelihood, significance, and impact of identified likely significant effects on traffic and transportation. My assessment also considers cumulative effects which may arise from interaction between the various impacts within the project and all of the different existing and/or approved projects in the same area as the proposed development.

9.11.2. I note and have taken into consideration the issues raised in the Planning Authority report, and internal technical reports referred to therein as detailed in Sections 3.2 and 3.3 above. I have also taken into consideration the issues and concerns raised in the observations received, as detailed in Section 6.3 and the submissions from Prescribed Bodies, as detailed in Section 3.4.

9.11.3. Analysing the direct effects, the EIAR details that the construction of the proposed wind farm will introduce substantial traffic volumes to the local network. The addition of 35,243 two-way HGV trips over the construction duration presents a clear direct effect. It is my view that the construction will lead to a significant but temporary increase in traffic volume, specifically HGV movements, which will directly affect the flow and safety on regional roads, especially the R494, R463, and R466. These findings are supported by the EIAR's detailed traffic generation models and counts, which predict the peak traffic volumes with reasonable accuracy.

9.11.4. Regarding indirect effects, these include potential delays and congestion on the regional road network, notably the R494, R463, and R466, which could disrupt local traffic patterns and extend to affect economic activities. These might include increased travel times, potential for accidents due to higher HGV presence, and wear and tear on road infrastructure. While the EIAR does not explicitly detail these effects, the projected traffic data suggests that the increase in HGV movements will likely lead to such indirect consequences. The extent of these effects is discernible when

considering the cumulative impact on traffic flow, road safety, and local economic activities.

9.11.5. The likelihood of the direct and indirect effects is quite high, especially during the construction phase. The EIAR provides a cogent forecast of increased traffic, which I consider to be well-founded based on the projected traffic volumes and the nature of the construction activities. The projected traffic increases and the nature of the construction activities suggest that the impacts are not just possible but probable.

9.11.6. The significance of the likely effects on traffic and transportation is substantial, particularly during peak construction activities. The scale of the project and the duration of the construction phase (12-18 months) imply significant alterations to traffic flows and patterns. However, it is my view that the significance is adequately contextualised within the EIAR, with the effects deemed temporary and peak impacts closely managed. While the traffic volumes are substantial, the effective duration of these volumes is limited to the construction period, after which the significance diminishes considerably.

9.11.7. Cumulative effects, particularly in conjunction with the Carrownagowan Wind Farm, could exacerbate traffic conditions. The EIAR identifies other regional developments that could contribute to these cumulative impacts. I consider that the EIAR has appropriately accounted for these in its assessment, though the actual extent of cumulative impacts will depend on the precise timing and coordination of the projects.

9.11.8. The EIAR proposes a comprehensive set of mitigation measures, which are both proactive and reactive in nature. These measures include *(inter alia)* implementing a robust Traffic Management Plan, appointing a dedicated traffic coordinator, engaging in community consultation, and establishing clear signage and emergency protocols. I consider that these measures, if rigorously enforced, will effectively mitigate the significant effects on traffic and transportation. The EIAR presents these strategies as integral components of project execution, which if fully implemented would minimise traffic impacts.

9.11.9. Based on the EIAR's findings and the proposed mitigation strategies, I conclude that the proposed development, while it will have a significant effect on traffic and transportation during the construction phase, these effects are manageable and will not be significant in the long term. I consider that the implementation of the proposed

mitigation measures will effectively prevent what might otherwise be significant effects on traffic and transportation.

9.12. Landscape and Visual Impact Assessment

9.12.1. I note and have taken into consideration the issues raised in the Planning Authority report, and internal technical reports referred to therein as detailed in Sections 3.2 and 3.3 above. I have also taken into consideration the issues and concerns raised in the observations received, as detailed in Section 6.3 and the submissions from Prescribed Bodies, as detailed in Section 3.4.

9.12.2. The EIAR provides a comprehensive analysis of the direct effects on landscape and visual impact. The EIAR delineate the methodologies applied, including Zone of Theoretical Visibility (ZTV) and Viewshed Reference Points (VRPs), which are integral to this assessment. The report suggests that the introduction of turbines will be the most significant direct effect, changing the landscape character and visual experience, especially from sensitive receptors or designated scenic routes. The EIAR's LVIA photomontages, in Vol. 4, substantiate these effects, allowing for a visual understanding of the project's scale within the landscape.

9.12.3. While the EIAR primarily addresses direct effects, it is my view that indirect effects, such as changes in local character, nocturnal landscape impacts due to lighting, and potential disruption to the visual amenity of local residents, should be considered. These effects, while not quantifiable to the same degree as direct effects, can substantially alter the perception of the landscape over time.

9.12.4. Based on the detailed methodologies and findings presented in the EIAR, there is a high likelihood that the direct effects outlined will occur. These include the visual presence of turbines within the landscape, the alteration of scenic views, and changes to landscape character. The likelihood of indirect effects occurring is also considerable, given the scale of the proposed development and its positioning within the visual catchment of numerous receptors.

9.12.5. The significance of the effects on landscape and visual amenity is context dependent. The EIAR’s use of a matrix to balance receptor sensitivity against impact magnitude, leads me to conclude that the significance of the effects, particularly in the immediate

vicinity of the development, is moderate to high. However, these effects would reduce with distance, lessening the overall significance across the broader landscape.

9.12.6. The cumulative effects, take into account the presence of existing or approved projects in the vicinity. The EIAR's approach to cumulative impact assessment is thorough, utilising ZTV to predict combined visual presences. I do not consider these cumulative effects to significantly compound the development's impact, due to the separation by topography and the distribution of views within the landscape.

9.12.7. The EIAR details traditional mitigation measures, including maintaining a minimum setback distance of 706 meters from residential properties, in accordance with the current 2006 and draft 2019 Guidelines. It is my view that the setback distances along with the proposed woodland retention, extension and re-establishment, as well as proposed hedgerow planting, as detailed in the Biodiversity Enhancement & Management Plan (Appendix 3.4) would mitigate the direct and cumulative visual impact of the proposed development on the landscape.

9.12.8. In consideration of the foregoing, I conclude that the Fahy Beg Wind Farm proposal would not have a significant adverse effect on the broader landscape and visual amenity of the area.

9.13. Telecommunications and Aviation

9.13.1. Having undertaken a thorough and detailed review of the EIAR, I am satisfied the EIAR presents a satisfactory analysis of the direct effects of the wind farm's operation on telecommunications and aviation. The rotating blades of wind turbines, as described in the EIAR, have the potential to cause electromagnetic interference, impacting a range of communication channels including satellite and cellular communications, radar systems, and broadcasting signals. The EIAR further delineates the distinctions between point-to-point and point-to-multipoint signals, noting the extensive use of both across Ireland and the potential remedial measures for nearby residences.

9.13.2. The direct effects on aviation are scrutinised, with a focus on the project's compliance with the Irish Aviation Authority's standards. The EIAR includes an Instrument Landing System (ILS) Impact Assessment conducted by Flight Calibration Services Ltd. (FCSL), which concluded that the wind farm would not adversely affect flight inspection procedures associated with Shannon Airport's Runway 24 ILS. Additionally, the EIAR

specifies that the proposed grid connection's underground placement will not affect aviation during or after construction.

9.13.3. Indirect effects are more complex to predict, but the EIAR provides an extensive consultation record that supports a low likelihood of such impacts. This includes potential signal scattering and signal delay for domestic broadcasting receivers, which are recognised within the report, albeit with the assertion that providers have not anticipated any direct impacts.

9.13.4. Based on the comprehensive data and consultation outcomes presented within the EIAR, it is my view that the likelihood of both direct and indirect adverse effects occurring seems low. The proactive engagement with stakeholders, coupled with the strategic placement of turbines and the detailed mitigation measures outlined, significantly reduces the probability of any substantial impacts. The significance of the identified effects, given the scale and duration of potential impacts, appears to be minor. The EIAR's evidence suggests that any electromagnetic interference will be transient and localised, with substantial setbacks and proposed agreements with broadcasters to ensure minimal disruption to signal reception.

9.13.5. The EIAR's approach to cumulative effects includes a review of existing and proposed projects, concluding no significant cumulative impacts on telecommunications or aviation. I am satisfied with this conclusion, given the individualised mitigation measures each project is required to implement, effectively precluding any additive adverse effects.

9.13.6. The mitigation measures, as outlined in the EIAR, are robust and tailored to the project's context. These include (inter alia) the design of the wind farm to avoid interference, agreements for remedial measures with 2RN (network operator), and the underground placement of grid connections to avoid aerial conflicts. Also, the provision of optimised reception devices to affected dwellings and the establishment of a protocol with RTE Transmission Network Ltd., would ensuring that any potential interference with digital terrestrial television is addressed.

9.13.7. In consideration of the above, I consider it reasonable to conclude that subject to the implementation of the proposed mitigation measures, the proposed Fahy Beg Wind Farm would not result in significant effects on telecommunications and aviation.

9.14. Interactions between the Factors in the EIAR

9.14.1. Article 3(1)(e) of the EIA Directive 2011/92/EU, as amended by the Directive 2014/52/EU, requires the identification of interactions between the various aspects of the environment as detailed throughout the EIAR. Table 17-2 in the EIAR describes and provides examples of the diverse range of interactions and inter-relationships between key environmental factors. These can be summarised as follows;

- The EIAR describes potential health impacts from dust arising during construction activities. While this is unlikely to occur at the main site due to the setback from dwellings, it could potentially affect areas along the GCR. The impacts are expected to be temporary and slight, with mitigation measures detailed across multiple chapters aimed at minimizing dust's effect on residential properties.
- The EIAR indicates that construction and decommissioning activities could impact biodiversity, particularly due to dust soiling vegetation. Mitigation efforts to control dust migration are outlined, with specific measures such as covered loads and a designated haul route to protect nearby vegetation and biodiversity.
- The EIAR puts forward that noise and dust from construction, compounded by increased traffic, could temporarily affect nearby dwellings. Mitigation measures including temporary noise barriers and dust control plans are posited to reduce these impacts.
- The EIAR notes that construction activities pose potential risks to water quality and aquatic biodiversity, especially due to sediment and nutrient release. Mitigation strategies are detailed, including silt fencing and avoidance of excavation during adverse weather, to safeguard watercourses and biodiversity.
- Construction activities have the potential to cause soil erosion and affect surface water runoff, impacting groundwater and nearby wells. The EIAR describes mitigation measures set out in relevant chapters to prevent impacts on groundwater. There are no recorded groundwater supply wells near the turbine locations, reducing the risk of contamination.
- The EIAR posits that soil compaction from heavy machinery use during construction could affect water infiltration, creating standing water hazards. Measures to control soil migration and maintain safety standards are outlined.

- The EIAR details that the project is not expected to significantly impact archaeological, architectural, and cultural heritage resources, with no state care monuments or major tourist attractions in proximity. Thus, the project's operational phase is unlikely to affect tourism or heritage resources significantly.
- The EIAR posits that the project's susceptibility to major accidents or natural disasters is negligible, with comprehensive safety mitigation measures incorporated into the design to reduce potential risks.

9.14.2. I am satisfied that the EIAR adequately identifies and describes the potential for various environmental impacts during the construction and operational phases of the wind farm and outline a robust framework of mitigation measures to manage these impacts effectively. On this basis, I conclude that subject to the implementation of these measures, the project would not result in significant adverse effects on the environment.

9.15. Reasoned Conclusion

9.15.1. Having regard to the examination of environmental information contained above, and in particular to the EIAR and supplementary information provided by the applicant, and the submissions from Planning Authority, observers and prescribed bodies in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows;

- **Noise**: Potential adverse effects on noise arising from the proposed development include the possibility of significant noise impacts from construction activities and heavy traffic movements, which may disturb residential amenities in the vicinity due to noise and disturbance. These impacts are mitigated by the comprehensive noise control measures outlined in the EIAR, which include restricting construction traffic to standard working hours, maintaining plant equipment to minimize noise, using effective exhaust silencers, and employing temporary barriers to reduce noise during specific activities. Additional measures like advance community notification and collaboration with local authorities further aim to minimize noise impact.
- **Air Quality and Climate**: The proposed wind farm is projected to have a significant positive impact on air quality and climate by producing no direct emissions,

supporting Ireland's renewable energy and greenhouse gas reduction goals, and ensuring minimal CO2 release due to strategic site selection with low peat content.

- **Biodiversity:** Potential adverse effects on biodiversity arising from the proposed development include significant habitat transformation over approximately 21 hectares, changing wooded areas to open spaces which may lead to considerable biodiversity loss, conflicting with local conservation goals. These impacts are mitigated by the commitment to habitat reinstatement with native species and minimised habitat disruption during site clearance, alongside the appointment of a Project Ecologist to oversee ecological considerations, and the implementation of specific mitigation measures for mammals, such as creating buffer zones to protect badgers during breeding. For bats, a 50m buffer around turbines and activity surveys will reduce collision risks, while for avifauna, hedgerow planting and construction lighting limitations will mitigate habitat loss and disturbance. Aquatic habitats will be safeguarded through protective measures like check dams and silt fences as part of a detailed Construction Environmental Management Plan.
- **Land, Soil, and Geology:** Potential adverse effects on land, soil, and geology arising from the proposed development include soil erosion and sedimentation due to tree felling and earthworks during construction, which could significantly impact local aquifers and soil stability. These impacts are mitigated by employing silt protection controls, runoff management during construction, robust containment strategies for potential oil leaks during operation, and reinstating silt controls during decommissioning. Further, the EIAR's phased construction overseen by geotechnical experts, along with strategies for soil stability and preventing soil and groundwater contamination, are designed to effectively reduce risks and maintain environmental standards.
- **Hydrology and Water Quality**: Potential adverse effects on hydrology and water quality arising from the proposed development include increased surface runoff, suspended solids, cement-based product contamination, and potential hydrocarbon release, especially during the construction phase, with moderate to significant impacts prior to mitigation. These impacts are mitigated by implementing a Surface Water Management Plan and a Construction Environmental Management Plan, which include measures including controlled refuelling, proper machinery operation, and construction methods that maintain existing hydrological

patterns, alongside continuous monitoring to ensure compliance and effectiveness of these strategies.

- **Population and Human Health:** Positive impacts on population and human health on the local economy from increased spending and jobs during the construction period and community benefit payments. Potential adverse effects would arise from shadow flicker, including the possibility of exceeding Wind Energy Development Guidelines (2006) limits at certain receptors, with theoretical models suggesting up to 16 receptors could experience shadow flicker beyond the annual and daily recommended maximums. These impacts mitigated by the installation of shadow flicker control modules equipped with light sensors and software to actively monitor conditions and halt turbine operation during periods likely to produce shadow flicker, ensuring compliance with guidelines and minimizing actual shadow flicker occurrences to a significant extent.
- **Traffic and Transportation**: Potential adverse effects from traffic and transportation arising from the proposed development include a significant but temporary increase in traffic volume, specifically Heavy Goods Vehicle (HGV) movements, which will directly affect the flow and safety on regional roads such as the R494, R463, and R466. These impacts are mitigated by the implementation of a comprehensive Traffic Management Plan, appointment of a dedicated traffic coordinator, community consultations, and establishing clear signage and emergency protocols, which are projected to effectively control and reduce traffic impacts during the construction phase.
- **Landscape and Visual Impact**: Potential adverse effects on landscape and visual impact arising from the proposed development include changes in landscape character and visual experience due to the introduction of turbines, especially from sensitive receptors or designated scenic routes, as substantiated by the EIAR's photomontages. These impacts are mitigated by maintaining a minimum setback distance in excess of 700 meters from residential properties, woodland retention, extension, re-establishment, and hedgerow planting as detailed in the Biodiversity Enhancement & Management Plan, which are anticipated to significantly mitigate direct and cumulative visual impacts.

9.15.2. Having regard to the above, I am satisfied that the proposed development would not have any unacceptable direct or indirect effects on the environment, subject to the implementation of the mitigation measures detailed in the EIAR and associated documents.

10.0 Appropriate Assessment

10.1.1. **Compliance with Article 6(3) of the Habitats Directive**

10.1.2. The requirements of Article 6(3) as related to screening the need for Appropriate Assessment of a project under Part XAB, Section 177U of the Planning and Development Act 2000 (as amended) are considered fully in this section.

10.1.3. **Background on the Application**

10.1.4. The original application was accompanied by a Natura Impact Statement (dated January 2023) prepared by Fehily Timoney Consultants.

10.1.5. The Planning Authority's assessment of the submitted Screening Report for Appropriate Assessment and Natura Impact Statement is detailed in Section 3.2.2 above. In summary, the Planning Authority conducted an Appropriate Assessment Screening for the proposed wind farm and concluded that a full Natura Impact Statement (NIS) was necessary due to potential significant impacts on nearby European sites. The applicants' screening report concurred with this need.

10.1.6. The Planning Authority noted how the NIS addressed potential impacts on the Lower River Shannon SAC, River Shannon and River Fergus Estuaries SPA, Danes Hole Poulnalecka SAC, and Curraghchase Woods SAC. Furthermore, the NIS included comprehensive surveys and identified potential impacts, including water run-off, sediment and nutrient release, and hydrocarbon contamination. Mitigation measures were outlined, emphasising the importance of the Construction Environmental Management Plan and on-site ecological monitoring. Despite these measures, the Planning Authority highlighted unresolved issues raised by the Development Applications Unit in the Department of Housing, Local Government, and Heritage. Concerns centred on spoil management, water quality protection, cumulative impacts, vegetation management, and invasive species control. Given these outstanding issues and lack of critical data, the Planning Authority could not confirm the absence

of adverse effects on the integrity of the European sites, thus leaving the potential impacts of the proposed development unresolved. On this basis, the Planning Authority refused permission for the proposed development, specifically relating to refusal reasons nos. 3,4, and 5, as detailed in 3.1 above.

10.1.7. A summary of the submission from the Development Applications Unit (DAU) of the Department of Housing, Local Government, and Heritage is provided in Section 3.4.8 above. The DAU provided a comprehensive review of the Natura Impact Statement (NIS) for the proposed wind farm. They stressed the need for full descriptions of mitigation measures, including their scientific basis, implementation, and monitoring, as well as contingency planning. The DAU observed that the NIS lacks detailed characterisation of impacts and specific mitigation measures, particularly for the Lower River Shannon SAC and Danes Hole Poulnalecka SAC. Mitigation strategies in the NIS and Construction Environmental Management Plan (CEMP) must be precisely outlined and referenced, with clear roles for all parties involved in their implementation. There was a call for clarity on ecologist oversight during vegetation clearance, especially where the presence of sensitive species like otters might be affected. Restrictions on vegetation clearance to protect breeding mammals and birds were recommended to be specified to outside the breeding season.

10.1.8. The DAU highlighted inconsistencies in the NIS regarding operational phase mitigation measures and called for comprehensive roles for the applicant, environmental manager, ECoW, and contractor. The ECoW is expected to document and sign off on the mitigation measures throughout the project. The DAU also expressed concerns over the lack of access to the confidential badger mitigation report, and questioned conclusions drawn about the hen harrier habitat usage. They also raised issues regarding the absence of a comprehensive decommissioning plan and found the information provided insufficient to conclude that decommissioning would not have adverse environmental effects.

10.1.9. The submission from HSE – Environmental Health Service notes that the proposed mitigation measures, if fully implemented, would provide adequate protection to ground and surface water during both the construction and operation phases.

10.1.10. The submission from Inland Fisheries Ireland (IFI) raises no objections to the proposed development and makes a series of recommendations for the protection of

instream and riparian riverine habitats. They specify that any related works should be conducted between July 1st and September 30th and require at least a week's advance notice prior to the start of felling operations. IFI also calls for consultation and approval on the methods for culvert and bridge crossings. IFI recommends ongoing water quality monitoring during the early operational phase to ensure no adverse effects on water bodies. For temporary stream diversions, they recommend lining to prevent erosion and silt loss. Culverts should mimic natural conditions with gravel back-fill, and measures like low-flow channels or baffles should be provided for wide box culverts to facilitate fish passage. During construction, IFI recommends cleaning all plant, machinery, and PPE to prevent the spread of invasive species and seeks consultation on the final CEMP. They stress that there should be no discharges of contaminated water to surface resources, with refuelling and servicing of equipment done on impermeable stands. All machinery should have spill kits and be leak-free, with secure bunded storage for oils and fuels. Concrete and lime storage should be dry and secure, and any diesel or petrol-driven pumps used on-site should be placed within portable bunded units.

10.2. **Stage 1 - Screening the need for Appropriate Assessment:**

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

10.2.2. Screening determines whether Appropriate Assessment is necessary by examining:

1) whether a project can be excluded from AA requirements because it is directly connected with or necessary to the management of the site, and
2) the potential effects of a project, either alone or in combination with other projects, on a Natura 2000 site in view of its conservation objectives and considering whether these effects will be significant.

10.2.3. Screening involves the following:

1. Description of plan or project, and local site or plan area characteristics.
2. Identification of relevant Natura 2000 sites and compilation of information on their qualifying interests and conservation objectives.
3. Assessment of likely effects – direct, indirect and basis of available information as a desk study or field survey or primary research a necessary.
4. Screening Statement with Conclusions.

10.2.4. **The proposed development and its local site characteristics**

10.2.5. I refer the Board to Chapter 2 of the Report to inform the Appropriate Assessment process which provides an extensive description of the proposed development. The proposed development is summarised in Section 2 above.

10.2.6. **Potential Impacts of the proposed development**

10.2.7. The Appropriate Assessment Screening Report provides a comprehensive description of the potential impacts of the proposed development, which is summarised under the headings below:

<u>Affected Areas</u>

- The construction of the proposed wind farm will result in the permanent removal of between 8.2 – 8.6 hectares of conifer plantation and 2.4 – 2.6 hectares of semi-natural woodland from within the site. Additionally, specific areas of improved agricultural grassland, dry meadows and grassy verges, wet grassland, hedgerows, and treelines will also be removed to accommodate the development.
- No peat stability assessment is needed due to the absence of significant peat deposits, with only shallow peat present.
- Grid connection work will mainly use existing roads, causing temporary and localised vegetation disturbance, with reinstatement as per local authority requirements.
- Temporary hardstandings for turbine delivery will involve minor vegetation removal, with all areas to be reinstated post-delivery.

- Node 31's works will also include embankment reprofiling in addition to the temporary installation of load-bearing surfaces and tree felling.
- The Biodiversity Enhancement and Management Plan will result in converting c. 3.1 hectares of conifer plantation into broadleaved oak woodland.
- The wind farm will consist of eight turbines, which is anticipated to operate for 35 years.
- During decommissioning, internal access tracks and hard standings will remain, while turbine locations will be covered with topsoil for natural revegetation.
- The project's hydrogeological impacts are expected to be localised, with no effects on European sites, and a 250m buffer zone identified for Ground Water Dependent Terrestrial Ecosystems.
- The construction of the wind farm will permanently alter the local environment by removing habitats such as woodlands and grasslands to construct turbines, hardstands, and substations.

Physical Changes

- Ten watercourse crossings are required within the wind farm site, including two crossings over an EPA-mapped river, with the installation of one concrete bridge and several pipe culverts.
- The excavation for turbine foundations could potentially alter local hydrogeology and impact Ground Water Dependent Terrestrial Ecosystems within a 250m buffer due to their depth of 3.5m.
- The grid connection will involve horizontal directional drilling to traverse four mapped watercourse bridges, minimizing the need to disturb riparian habitats.
- There is a risk of spreading invasive species along the grid route and at TDR nodes due to the movement of potentially contaminated equipment.
- Tree trimming along the TDR may disturb local wildlife, such as otters, and there is potential for invasive species spread between nodes.
- Fencing around Ballymoloney Woodland and the new oak woodland area aims to prevent grazing by large herbivores, promoting natural regeneration.

- Operational activities during the wind farm's lifetime may disturb local species, and the density of forest cover will be reduced for the long-term to accommodate wind turbines.
- Construction of culverts and a bridge within the wind farm site will lead to the permanent loss of habitats and possible impacts on water quality and aquatic species.
- Groundwater-dependent ecosystems may be affected by the deep excavations for turbine foundations, potentially altering water depth and flow.
- The construction and operation of the wind farm could displace birds and bats due to habitat loss and human activity.
- There is a risk of bird collisions with turbines and infrastructure, potentially affecting migratory patterns.
- Construction could disturb invasive plant species within the project site and surrounding areas, leading to their spread both onsite and offsite.
- Upon decommissioning, the turbines will be disassembled and removed, but internal site access tracks, hard standings, and grid connection infrastructure, including the on-site substation, will remain in place for potential future use.

Resource Requirements

- Construction materials, such as stone for internal access roads and hardstands, will be sourced from local quarries, with any surplus materials, including topsoil and glacial till, reused on-site for landscaping and other purposes, avoiding the need for peat deposition areas.
- There will be no resource requirements during the operation and decommissioning phases of the wind farm, as all necessary materials will be reused on-site or sourced from existing quarries.

Emission to Air

- The main source of air emissions during construction will be dust generated by earthworks, tree felling, trench excavation, construction vehicle movement, and material handling, which may affect local vegetation and air quality temporarily.

- Once operational, the wind farm is not expected to produce significant direct emissions, with only occasional emissions from a diesel generator used as a backup power supply.
- Dust from construction may physically affect vegetation through smothering and reduced photosynthesis, and chemically through soil changes, potentially leading to plant or animal loss, though these impacts are expected to be reversible after construction ends.
- Due to the size of the site, dust emissions may affect areas up to 500 meters from the site exit, particularly along roadways where vehicles exit the construction site.

Noise

- Construction activities including foundation works, turbine erection, trench excavation, tree felling, quarrying, and substation construction may generate significant noise levels, potentially affecting local wildlife and residents.
- Operation of the wind farm will produce mechanical and aerodynamic noise from turbines, which could impact local fauna and communities.
- Noise impact during decommissioning is expected to be lower than construction due to some infrastructure remaining in situ.
- Various species respond differently to noise, with potential effects ranging from behavioural changes to no response; sensitivity depends on the type and duration of noise.

Water Pollution

- Construction could increase surface water runoff, leading to sedimentation in watercourses, affecting aquatic habitats and species.
- Horizontal directional drilling for grid connection carries a risk of frac-out, potentially degrading water quality and impacting aquatic life.
- Release of cement or concrete into water bodies during construction could significantly alter water chemistry, harming aquatic organisms.

- Construction of a single-span concrete bridge at watercourse WF-HF5 within the wind farm site will occur without in-stream works, but ground disturbance during site preparation is expected.
- Eight additional watercourse crossings for the grid cable route will cause ground and in-stream disturbance.
- Installation methods for these crossings include both standard trenching and horizontal directional drilling (HDD), with associated risks including suspended solid releases, hydrocarbon pollution, and drilling lubricant escapement.
- Use of cement-based products in foundations and refuelling activities pose risks of watercourse contamination.
- During the operational phase, changes in site hydrology are possible, but the risk of sediment release is negligible due to revegetation and the non-intrusive nature of wind farm operations.
- Decommissioning will leave in place internal access tracks, hard standings, and grid infrastructure; no additional watercourse impacts are anticipated during this phase.
- There is a concern for the spread of crayfish plague within watercourses in the River Shannon catchment area, potentially exacerbated by construction machinery.
- Increased flow rates from hard surfaces of the wind farm could cause scouring of stream beds downstream.

Waste Emissions

- Waste emissions during construction will include various materials, with a plan to reuse non-hazardous materials on-site where possible.
- Runoff and waste release into aquatic environments have the potential to degrade water quality and affect the carrying capacity for aquatic life.
- The construction phase of the project will reuse materials like shuttering, rebar cut-offs, and excavated materials on site for various construction purposes, thereby reducing waste.
- During operation, waste will be limited to oils, lubricants, and possibly turbine components if replacements are required.

- Decommissioning will generate waste similar to construction but to a lesser extent, as turbine components will be dismantled on-site and removed by standard vehicles.

Transportation Requirements

- Construction requires upgrading 1.4 km and creating 7.2 km of new internal access tracks, with all project-related transportation occurring via road.
- An average daily increase of 114 HGV trips is expected during the 12-month construction, peaking at 186 trips during the sixth month. LGV traffic will average 36 trips daily, peaking at 47 during months seven and eight.
- Operational traffic will be minimal, related to maintenance, monitoring, and occasional visits by staff.
- Decommissioning traffic impacts will be significantly lower than construction, as existing access tracks and grid connections will remain.
- The traffic increase does not meet the UK DMRB criteria for significant road links, suggesting negligible impact on local air quality from traffic emissions.

Seasonal Displacement

- The project is planned for a 10-year permission and a 35-year operational lifespan, with construction estimated to take 12 months and decommissioning up to 6 months.
- There is a potential for seasonal displacement of birds due to habitat loss during all project stages, with species like hen harriers possibly avoiding areas within 250m to 500m of turbines.
- There could be disturbances to otters, especially during construction and decommissioning, impacting their key seasonal life cycle stages.
- Active wind farms may disrupt regular movement or migration routes of bird species, forcing them to use additional energy to navigate around the site.
- The turbines, significantly taller than the surrounding landscape, pose a collision risk for birds.

In-combination impacts

- Within 20 km of the wind farm site, there are other consented wind and solar farms, large housing developments, quarry restoration projects, infrastructure schemes, and educational facilities that could have in-combination effects with the wind farm project.
- The construction phase could contribute suspended solids or pollutants to nearby watercourses, with in-combination impacts possible if construction occurs simultaneously with other projects within the same sub-catchments.
- Potential combined impacts include habitat loss for qualifying interest species and reductions in water quality, especially if associated with other land disturbances like forestry and agricultural activities.
- Construction machinery could introduce or disperse non-native invasive species, which may spread to adjacent lands and along nearby watercourses.

10.2.8. **Existing Environment**

10.2.9. Section 2 of the Appropriate Assessment Screening report provides a description of the existing environment, which can be summarised as follows;

Project location:

- The proposed wind farm site is situated in County Clare, c. 10 km north of Limerick City and 6 km southwest of Killaloe. It is located in a rural setting characterised by scattered one-off housing and farmyards along the roads, typical of a linear settlement pattern. Bridgetown, the nearest village, is c. 1.5 km southeast of the site.
- The grid connection for the wind farm also lies within County Clare, stretching from the site and crossing several roads—including the R466, various local un-named roads, the L3046, R471, R465, and L3056—to the Ardnacrusha 110kV Substation.

- The Turbine Delivery Route (TDR) passes through Counties Limerick, Tipperary, and Clare. Starting at the Port of Foynes, the route heads east on the N69, then onto the N18/M7 heading east and north until the Birdhill Junction 27. It continues on the R494 towards Killaloe, crosses the Shannon via the Killaloe bypass bridge, follows the R463 southwest to O'Briensbridge, and from there, it turns right onto the R466 leading to the proposed site entrance.

Hydrology

- The proposed wind farm site in County Clare intersects two hydrometric areas of the Irish River Network System: the Lower Shannon and Shannon Estuary North, further divided into the sub-catchments Shannon [Lower]_SC_080 and Owenogarney_SC_010.
- The site contains two sub-basins: Bridgetown (Clare)_010 and Broadford_010. Turbines T1 and T2 are within the Broadford_010 sub-basin, while T3 to T8 are in the Bridgetown (Clare)_010 sub-basin.
- Key hydrological features at the site include several streams—Black (O'Briensbridge), Fahy (Clare), Kilroughil, and Broadford—contributing to the surface water runoff within these sub-basins. The Bridgetown (Clare) stream, near the site entrance, drains the Balyquinn Quarry. Runoff from the Bridgetown sub-basin eventually joins the River Black, which flows into the River Shannon at Parteen Weir. Conversely, the Broadford sub-basin's runoff drains into the Broadford River, which joins the Owenogarney River and eventually enters the Shannon Estuary near Bunratty.
- The eastern part of the site drains into the River Black, which enters the Lower River Shannon SAC (located c. 3.2 km to the southeast of the site), while the western part drains into the Owenogarney River, leading to the same SAC and the River Shannon and River Fergus Estuaries SPA (located c. 19km to the southwest of the site).
- The grid connection from the on-site substation to Ardnacrusha spans five waterbody catchments, as follows:
    - Bridgetown (Clare)_010- IE_SH_25B230100

- Glenomra Wood Stream_010- IE_SH_25G120100
- Blackwater (Clare)_010- IE_SH_25B060120
- Blackwater (Clare)_020- IE_SH_25B060250
- North Ballycannan_010- IE_SH_25N170970

- Biodiversity Enhancement Lands adjacent to the proposed infrastructure will include areas for oak woodland establishment, natural regeneration of Ballymoloney Wood, and retention of existing wildwood in Ballyquin Quarry. These lands lie within the Shannon [Lower]_SC_080 and Owenogarney_SC_010 sub-catchments, impacting the local hydrology by contributing to nearby watercourses.

Groundwater Vulnerability

- The groundwater vulnerability within the proposed wind farm site exhibits a range, from 'H- High' to areas where rock is at or near the surface. Along the grid connection, the vulnerability classification varies from 'Moderate' to 'Extreme', with localised areas of exposed bedrock.
- The site is situated within three groundwater bodies (GWBs): Lough Graney, Tulla-Newmarket-on-Fergus, and Broadford Gravels.
- The grid connection predominantly lies beneath the Lough Graney GWB, with the northern part underlain by the Broadford Gravels GWB and the southern part by the Ardnacrusha GWB.
- The Geological Survey of Ireland (GSI) states that for the Lough Graney and Tulla-Newmarket-on-Fergus GWBs, diffuse recharge occurs through rainfall percolating through subsoil. The recharge rate is influenced by soil and subsoil thickness and permeability, and the slope of the land. Due to the low permeability of these aquifers, a significant proportion of recharge rapidly discharges to surface watercourses, thereby reducing the available groundwater resource. High water tables in these areas may also lead to rejected recharge.
- For the Ardnacrusha GWB, diffuse recharge is prevalent, with rainfall soaking through subsoil and directly recharging the aquifer, particularly in areas where the aquifer is exposed. Surface water runoff from the less permeable Lough Graney GWB may sink into this aquifer, contributing to recharge. Despite the high

transmissivity of this aquifer, some rejected recharge occurs in low-lying areas with high water tables.

- No specific GWB characterisation report is available for Broadford Gravels GWB. GSI online mapping indicates it as a poor aquifer, primarily unproductive except in localized zones. The groundwater recharge rate in this area varies significantly, ranging from 1-50mm to 801-900mm per year.

Habitats

10.2.10. Within the proposed wind farm site, the dominant habitats include modified environments such as mature and semi-mature commercial conifer plantations (WD4) and improved agricultural grassland (GA1). Additionally, the site features a variety of habitats like mixed broadleaved woodland (WD1), scrub (WS1), oak-ash-hazel woodland (WN2), wet grassland (GS4), and recolonising bare ground. The site also contains eroding upland streams (FW1), dry-humid and acid grassland (GS3), spoil and bare ground (ED2), and dense bracken (HD1).

10.2.11. A habitat listed in Annex I of the EU Habitats Directive, namely *Molinia* meadows on calcareous, peaty, or clayey-silt-laden soils (Molinion caeruleae) (6410), is located within the study area but outside the proposed development footprint, classified as species diverse wet grassland of County Importance.

10.2.12. Regarding the grid connection, there are no Annex I habitats within its footprint. The main habitats along the Grid Connection Route (GCR) include buildings and artificial surfaces (BL3), dry meadows and grassy verges (GS2), hedgerows (WL1), treelines (WL2), improved agricultural grassland (GA1), wet grassland (GS4), and amenity grassland (GA2). The GCR also traverses areas of wet willow-alder-ash woodland (WN6), mixed broadleaved woodland (WD1), conifer plantation (WD4), lowland/depositing rivers (FW2), and drainage ditches (FW4).

10.2.13. The GCR connects the on-site substation to the Ardacrusha 110kV substation, passing through various localities and intersecting rivers at five locations. The route follows several roads, including the L3056, R465, and R471, and traverses agricultural fields to reach the proposed on-site substation.

10.2.14. The Turbine Delivery Route (TDR) is confined to public roads, with temporary accommodations for oversized load delivery. Along the TDR, habitats mainly consist

of buildings and artificial surfaces (BL3), dry meadows & grassy verges (GS2), hedgerows (WL1), treelines (WL2), improved agricultural grassland (GA1), ornamental/non-native shrub (WS3), and amenity grassland (GA2).

10.2.15. The biodiversity enhancement areas support both recently and long-established mixed broadleaved woodland (WD1), and conifer plantation (WD4).

10.2.16. High-impact/Schedule III invasive species like Japanese knotweed and Himalayan knotweed have been identified near the derelict farm within the site and in a field adjacent the grid connection route (GCR). Japanese knotweed is found c. 54 meters from the closest proposed infrastructure and adjacent to the grid connection, while Himalayan knotweed is c. 50 meters north of a proposed access track.

10.2.17. Giant hogweed, another high-impact invasive species, is present in two locations along an un-named local road near the grid connection northwest of Harol's Cross. Cherry laurel, also a high-impact invasive plant species, is located at the derelict farm within the proposed site and along the GCR in association with private garden boundaries.

10.2.18. Other lower impact invasive species have been historically recorded in various locations, including along the GCR and at Turbine Delivery Route (TDR) nodes. These include butterfly bush, Himalayan honeysuckle, montbretia, red osier dogwood, snowberry, sycamore, traveller's joy, winter heliotrope, wall cotoneaster, Norway maple, Japanese rose, small-leaved lime, giant butterbur, fuchsia, and Wilson's honeysuckle. The invasiveness impact of some of these species, including fuchsia and Wilson's honeysuckle, has not been assessed by the National Biodiversity Data Centre (NBDC).

10.2.19. No invasive species have been recorded within the proposed Biodiversity Enhancement Areas.

Existing Soils and Geology

10.2.20. The Geological Survey of Ireland's (GSI) online 1:50,000 scale Quaternary Geology map provides insights into the soil and geological composition of the proposed Fahybeg Wind Farm site. The site's characteristics are as follows:

- Northern Portion: This area is characterised by bedrock outcrop or sub-crop, particularly visible on the slopes of Lackareagh Mountain.
- Central and Southern Portions: These regions are primarily underlain by Till derived from Lower Palaeozoic sandstones and shales.
- Western Extent: This part of the site is predominantly underlain by gravels also derived from Lower Palaeozoic sandstones and shales.
- Western Margin: Along the far western margin of the site, there are narrow linear deposits of Fen Peat and Alluvium.

10.2.21. Most turbine locations and related infrastructure are situated in areas classified as Till derived from Lower Palaeozoic sandstones and shales. Only the proposed turbine T5 is located in an area with bedrock at or near the surface. The planned substation, temporary construction compounds, and sections of access tracks are located in areas underlain by gravels derived from Lower Palaeozoic sandstones and shales. The existing paved road at the quarry entrance sits atop fen peat.

10.2.22. The Appropriate Assessment Screening report notes that given the sporadic and shallow nature of peat deposits across the site, a peat stability analysis was deemed unnecessary. The fen peat areas are only present under the existing quarry access road, which will see site traffic and grid connection installation.

10.2.23. **Natura 2000 Sites that may be affected by the proposed project**

10.2.24. Section 3.1.3 of the European Commission Notice (2021) on the 'Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (2021/C 437/01), states that in identifying Natura 2000 sites (European sites) which may be affected by the project, the following should be identified:

- any Natura 2000 sites geographically overlapping with any of the actions or aspects of the plan or project in any of its phases, or adjacent to them;
- any Natura 2000 sites within the likely zone of influence of the plan or project. Natura 2000 sites located in the surroundings of the plan or project (or at some distance) that could still be indirectly affected by aspects of the project, including as regards the use of natural resources (e.g., water) and various types of waste, discharge or emissions of substances or energy;

- Natura 2000 sites in the surroundings of the plan or project (or at some distance) which host fauna that can move to the project area and then suffer mortality or other impacts (e.g., loss of feeding areas, reduction of home range);
- Natura 2000 sites whose connectivity or ecological continuity can be affected by the plan or project.

10.2.25. There are no Natura 2000 sites geographically overlapping with the site, grid connection and biodiversity enhancement areas. The Turbine Delivery Route will be along existing roads which traverse or abut the following Natura 2000 sites:

- Lower River Shannon SAC (002165);
- Barrigone SAC (000432);
- Curraghchase Woods SAC (000174);
- Askeaton Fen Complex SAC (002279);
- River Shannon and River Fergus Estuaries SPA (004077).

10.2.26. The Appropriate Assessment Screening Report notes the following potential impacts on European sites due to turbine delivery for the proposed project:

- No works are proposed near the Barrigone SAC, Askeaton Fen Complex SAC, or River Shannon and River Fergus Estuaries SPA that would affect these sites during turbine delivery.
- Each turbine delivery route (TDR) node has been assessed for its proximity and connectivity to European sites.
- One node (Node 20) adjacent to a European site may involve tree branch trimming, which has the potential to disturb otters in the Lower River Shannon SAC.
- Node 23 is c.240 meters from the Lower River Shannon SAC, with works potentially affecting otter habitats due to sediment input and disturbance.
- Node 6's tree trimming activities near the Curraghchase Woods SAC are unlikely to affect Lesser Horseshoe bats as no tree removal is proposed, and these bats do not roost in trees.
- Nodes 20 and 23 warrant further assessment due to their proximity to the Lower River Shannon SAC.

- There is a risk of invasive species spread from TDR nodes impacting the Lower River Shannon SAC and Curraghchase Woods SAC.
- Other nodes show no direct connectivity to European sites concerning the nature of the works required.

10.2.27. Zone of Influence (ZoI) is defined as the area over which the proposed development would affect the receiving environment such that it could potentially have significant effects on the qualifying interests or SCI of a European site, or on the achievement of their conservation objectives.

10.2.28. Having regard to the information and submissions available, the nature, size and location of the proposed development and its potential direct, indirect and cumulative effects as detailed above, the source pathway receptor principle and sensitivities of the ecological receptors, I consider the designated Natura 2000 European sites, as set out in Table 1 below, to be within the zone of influence of the subject site.

Table 1: Relevant Natura 2000 European Sites

Site Name & Code	Qualifying Interest / Special Conservation Interest	Distance from the site	Connections (source, pathway receptor)	Considered further in screening Yes/No
Slieve Bernagh Bog SAC (002312)	Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	2.3 km to closest turbine, 4.1 km to grid connection 5.1 km to closest TDR Node (Node 32) 2.2 km to closest BEMP area	No Considering the project's limited spatial impact as detailed in Section 11.1.23 above, the considerable distance to the European site, the absence of mobile conservation interests, and the lack of ecological connectivity with the project site, the European Site is deemed beyond the Zone of Influence (ZoI) of the project.	No
Glenomra Wood SAC (001013)	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	3.2 km to closest turbine 0.6 km to grid connection 2.9 km to closest TDR Node (Node 32) 1.5 km to closest BEMP area	No Considering the project's limited spatial impact as detailed in Section 11.1.23 above, the considerable distance to the European site, the absence of mobile conservation interests, and the lack of ecological	No

			connectivity with the project site, the European Site is deemed beyond the Zone of Influence (ZoI) of the project.	
Lower River Shannon SAC (002165)	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310]	2.9 km to closest turbine 1.6 km to grid connection 0.0 km to closest TDR Node (Node 20) 3.9 km to closest BEMP area	Yes Freshwater aquatic habitats and species, such as Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260], White-clawed Crayfish [1092], and Salmon [1106], are highly sensitive to potential water quality alterations from water and waste emissions. Considering the Precautionary Principle, the proximity of on-site and intersecting watercourses connected to the downstream SAC suggests possible emissions to these watercourses could enter the SAC. Additionally, due to the TDR accommodation works at Nodes 20 & 23 near SAC-connected rivers, there is potential for disturbance to the QI species,	Yes

	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt laden soils (Molinion caeruleae) [6410] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096]		otter. Consequently, the SAC falls within the Zone of Influence (ZoI) for the wind farm site, grid connection, and TDR.	

	Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Tursiops truncatus (Common Bottlenose Dolphin) [1349]			
Lough Derg (Shannon) SPA (004058)	Cormorant (Phalacrocorax carbo) [A017] Tufted Duck (Aythya fuligula) [A061] Goldeneye (Bucephala clangula) [A067] Common Tern (Sterna hirundo) [A193] Wetland and Waterbirds [A999	6.1 km to closest turbine 8.8 km to grid connection 2.2 km to closest TDR Node (Node 19) 6.5 km to closest BEMP area	Species of Conservation Interest (SCI) may be present near the proposed project due to its proximity and the large water bodies in the vicinity. Observations confirm cormorants traversing the study area, indicating that the Special Protection Area (SPA) lies within the project's Zone of Influence (ZoI).	Yes
Danes Hole, Poulnalecka SAC (000030)	Caves not open to the public [8310] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303	9.2 km to closest turbine 9.2 km to grid connection 11.2 km to closest TDR Node (Node 32) 8.5 km to closest BEMP area	The Lesser Horseshoe Bat, with a migratory range of up to 10 km for seasonal roosting, may utilise areas around the wind farm for summer habitation and feeding. This connectivity suggests the potential for habitat loss impacting the bat population associated with the SAC. Additionally, there's a risk of collision or barotrauma fatalities	Yes

			during the farm's operation. Consequently, the SAC falls within the project's Zone of Influence.	
Slievefelim to Slivermines Mountains SPA (004165)	Hen Harrier (Circus cyaneus) [A082]	11.5 km to closest turbine 12.2 km to grid connection 3.9 km to closest TDR Node (Node 11) 12.2 km to closest BEMP area	Hen Harrier sightings in and around the project area, including within a 500m radius of turbines, indicate potential habitat loss, noise, and disturbance impacts during construction. Operationally, the species faces collision risks with turbines and infrastructure, and behavioural changes due to habitat avoidance within 250m to 500m of active turbines. These factors lead to permanent displacement over the project's duration, placing the SPA within the project's Zone of Influence.	Yes
Clare Glen SAC (000930)	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Trichomanes speciosum (Killarney Fern) [1421]	13.2 km to closest turbine 13.0 km to grid connection 7.4 km to closest TDR Node (Node 11) 13.9 km to closest BEMP area	Considering the scope of potential project impacts detailed in Section 11.1.23 above, the European site's distance from the project, and the absence of mobile conservation interests and ecological links (such as	No

			hydrological connections) between these habitats and the project site, the European site is determined to be outside the project's Zone of Influence.	
River Shannon and River Fergus Estuaries SPA (004077)	Cormorant (Phalacrocorax carbo) [A017] Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Scaup (Aythya marila) [A062] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141]	14.3 km to closest turbine 4.9 km to grid connection 0.36 km to closest TDR Node (Node 9) 13.3 km to closest BEMP area	In line with the Precautionary Principle and acknowledging the hydrological connections, there exists the potential for emissions to watercourses from the wind farm site, grid connection, and TDR Nodes (9, 20 & 23) to reach the SPA. Disturbances to SCI species at Node 9 may occur during TDR works. SCI species such as cormorants, whooper swans, golden plovers, and black-headed gulls have been observed within the 500m buffer of turbines, indicating potential risks during the operational phase including collision with turbines and disruption of regular movement patterns. Hence, the SPA falls within the Zone of Influence of the wind farm project, including its grid connections and TDR.	Yes

	Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Greenshank (Tringa nebularia) [A164] Black-headed Gull (Chroicocephalus ridibundus) [A179]			
Kilkishen House SAC (002319)	Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	14.4 km to closest turbine 12.7 km to grid connection 16.3 km to closest TDR Node (Node 32) 13.8 km to closest BEMP area	Considering the 10 km migratory range of the Lesser Horseshoe Bat, the SAC's bats are unlikely to use the wind farm area for summer roosting or foraging. Thus, the project is does not have the potential to significantly affect the species linked to the SAC. Additionally, due to the wind farm's location beyond the bats' migratory range from the	No

			SAC, no operational phase effects are anticipated. Hence, the SAC remains outside the project's Zone of Influence.	
Silvermines Mountains West SAC (002258)	Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Calaminarian grasslands of the Violetalia calaminariae [6130]	14.4 km to closest turbine 16.1 km to grid connection 6.9 km to closest TDR Node (Node 11) 15.0 km to closest BEMP area	Considering the scope of potential impacts detailed in Section 11.1.23 above, the European site's distance from the project area, the absence of mobile conservation interests, and lack of ecological connectivity, such as hydrological pathways, it is concluded that the European Site falls outside the project's Zone of Influence.	No
Slieve Aughty Mountains SPA (004168)	Hen Harrier (Circus cyaneus) [A082] Merlin (Falco columbarius) [A098]	15.8 km to closest turbine 14.8 km to grid connection 6.9 km to closest TDR Node (Node 19) 15.5 km to closest BEMP area	Hen harrier and merlin sightings within the 500m buffer around the wind farm suggest vulnerability to habitat disruption, noise, and human activity during construction. Operationally, these species face collision risks with turbines and infrastructure, and their regular movements may be impeded. Hen harriers are known to avoid areas within	Yes

			250m to 500m of operational turbines, indicating potential displacement throughout the project's duration. Consequently, the Special Protection Area (SPA) is considered within the project's Zone of Influence.	
Curraghchase Woods SAC (000174)	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Taxus baccata woods of the British Isles [91J0] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016c Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303)	28.8 km to closest turbine 20 km to grid connection 100 m to closest TDR Node (Node 6) 27.3 km to closest BEMP area	The Turbine Delivery Route (TDR) within the Special Area of Conservation (SAC) requires no construction, and no invasive species are present at intersecting nodes. Tree trimming along the N69 may affect trees near the SAC; however, as lesser horseshoe bats do not roost in trees and no tree removal is planned, the TDR's impact is negligible. Additionally, there is no direct hydrological connection between the SAC and the project site, although the risk of invasive species spread from TDR nodes remains.	Yes

Askeaton Fen Complex SAC (002279)	Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Alkaline fens [7230	26.6 km to closest turbine 17.8 km to grid connection 7.4 km to closest TDR Node (Node 8) 36.2 km to closest BEMP area	The Turbine Delivery Route (TDR) intersects the SAC's road network, yet entails no construction activities and no invasive species have been detected at intersecting TDR nodes. Given the absence of ecological connections, such as hydrological pathways, the SAC is deemed to fall outside the Zone of Influence of the project.	No
Barrigone SAC (000432)	Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Limestone pavements [8240] Euphydryas aurinia (Marsh Fritillary) [1065]	38.2 km to closest turbine 30.2 km to grid connection 3.1 km to closest TDR Node (Node 3) 36.2 km to closest BEMP area	The Turbine Delivery Route (TDR) passes through the SAC's roads, however no construction works are proposed, and no invasive species are identified at the Points of Interest (POIs) intersecting the SAC. Given that there is no ecological connectivity, such as hydrological pathways, the SAC is considered outside the project's Zone of Influence (ZoI).	No

10.2.29. **Assessment of Likely Significant Effects**

10.2.30. The task of establishing whether the plan or project is likely to have an effect on a Natura 2000 site or sites is based on a preliminary impact assessment using available information and data, including that outlined above, and other available environmental information (e.g., water quality data), supplemented as necessary by local site information and ecological surveys. A European site will only be at risk from likely significant effects where the source-pathway-receptor link exists between the proposed development and the European site.

10.2.31. Table 3.2 in the Appropriate Assessment Screening Report offers a detailed analysis of the potential significant effects that the proposed project may have on the Natura 2000 European Sites. This analysis is based on the concept of source-pathway-receptor connectivity, as identified in Table 1 above. The findings are summarised below:

10.2.31.1. ***Potential likely significant effects on the Lower River Shannon SAC***

Land-take / Excavations (Wind Farm Site and BEMP):

- Construction activities, including turbine construction, associated works, and felling within the site, could result in drainage to Shannon and Owenogarney sub-catchments, leading to possible habitat loss and water quality degradation.
- Installation of box culverts and bridges at specified locations will cause permanent habitat loss within the footprint of these works.
- If land take and excavations are not managed appropriately, it could result in silt-laden runoff and suspended solids entering the Shannon and Owenogarney watercourses. This can change the physicochemical conditions in the Fahy, Bridgetown, Black, and Kilroughil streams, all of which drain into the SAC, potentially impacting its aquatic species and habitats.

Land-take / Excavations (Grid Connection):

- The disturbance of vegetation during the establishment of the grid connection is expected to be localized and temporary; however, the vegetation affected is considered to have low ecological value.

- The grid connection traverses through Shannon sub-catchments and drains into the SAC via several watercourses. Mismanagement could lead to similar alterations in water quality as noted above.

Land-take / Excavations (TDR):

- Vegetation disturbances at TDR Node 23 may ultimately affect the Ardcloony River, while disturbances at Node 9 may affect Bunlicky Lake—both are within the SAC's catchment area.
- The turbine delivery route crosses watercourses at Nodes 20 and 23, where existing structures do not require additional works, thus minimizing direct impacts. However, the potential release of silt and pollutants during activities at Node 23 could affect the Ardcloony River and subsequently the SAC.

Physical Changes to the Environment / Changes in Existing Environmental Pressures:

- Construction and accommodation works, particularly at Nodes 20 and 23, could displace mammals such as otters and may facilitate the spread of non-native invasive species.
- The possibility of introducing or spreading crayfish plague prior to construction activities could significantly impact the aquatic ecosystem.

Emissions to Air (Dust): Dust from earthworks, tree felling, and material movement has the potential to indirectly affect the watercourses through eventual drainage, changing water quality and affecting aquatic species.

Noise Emissions: Construction noise, especially from tree trimming and surface installation works, has the potential to disturb terrestrial and aquatic species. The impact is species-specific and varies with the nature of the noise and the species' sensitivity.

Emissions to Water (Wind Farm & GCR):

- Sediment-laden runoff could temporarily degrade the quality of sub-catchment watercourses, reducing their capacity to support aquatic life.
- The release of cement or concrete, altering pH and other chemical parameters, could be particularly harmful to aquatic life.

Emissions to Water (TDR): Nodes 20 and 23 are points of concern for emissions to water. Inappropriately managed works at these nodes could lead to sediment and

hydrocarbon pollution, impacting the Ardcloony River and Ballyteige watercourses connected to the SAC.

Waste Emissions: The project's waste emissions to watercourses have the potential to alter pH, nutrient levels, and oxygen demand, which could affect the watercourses' carrying capacity for aquatic species and degrade water quality.

In-combination Effects: Simultaneous activities from the project combined with other developments, forestry, and agricultural activities within the same catchment could add sediments and nutrients to the watercourses, exacerbating impacts on the SAC.

Resource Requirements: Resources such as stone for construction will be sourced from nearby quarries. No hydrological connectivity has been identified for these sites with the SAC, suggesting a reduced likelihood of significant effects from this source.

Transportation Requirements and Duration of Project:

- Increased traffic and new access roads are not expected to have significant effects based on the UK DMRB guidance.
- Operational and decommissioning effects on water quality are predicted to be localised and not significant, although potential significant effects could occur during decommissioning.

10.2.32. The assessment concludes that the conservation objectives of the Lower River Shannon SAC are sensitive to changes in water quality, habitat structure, and the presence of specific species, all of which could be impacted by the proposed project.

10.2.32.1. ***Potential for likely significant effects on the Lough Derg (Shannon) SPA from the proposed project***

Land-take / Excavations (Site and BEMP): The construction will result in habitat loss and alteration, but no valuable habitats for waterbirds will be lost. The ornithological assessment indicates no significant effects on waterbird populations.

Land-take / Excavations (Grid Connection and TDR): Any vegetation disturbance is deemed temporary and of low ecological value. The assessments show no significant effects due to a lack of valuable waterbird habitats being affected.

Physical Changes / Change in Existing Environmental Pressures: The construction and operation, including 8 wind turbines, could potentially affect birds and bats due to barrier effects and collision risks. However, the low activity of species like the cormorant within the turbine buffer zone indicates no likely significant effects.

Resource Requirements: The sources for aggregates are existing quarries that do not offer habitat to Site of Community Importance (SCI) species, so no significant effects are anticipated.

Emissions to Air: Construction and decommissioning are expected to generate emissions, but due to the lack of suitable habitats and SCI species records at the site, no significant effects are expected.

Noise Emissions: Increased human presence and activities, including noise from wind turbines, are expected, but no pathways or receptors for significant effects are identified.

Emissions to Water: Potential temporary degradation of water quality from sedimentation and harmful substances like cement could affect aquatic species. However, as the SPA is located upstream, it is not susceptible to pollution from the project.

Waste Emissions: Similar to emissions to water, generated waste could alter watercourse conditions, but the core areas for SPA species are upstream, hence no significant effects are predicted.

Transportation Requirements: The increase in traffic is below the threshold of concern, with no pathways or receptors for significant effects identified.

Duration of the Project: The operation of the wind farm may displace birds or present a collision risk, but the single recorded instance of a cormorant in the area suggests no significant effects.

In-combination Effects: There is potential for combined impacts with other projects, especially concerning water quality from construction. However, since the SPA is upstream, it's not expected to be affected.

10.2.32.2. ***Potential for likely significant effects on Danes Hole, Poulnalecka SAC from the proposed project***

Land-take / Excavations of the Site and BEMP: The construction will result in the permanent removal of wooded habitats, impacting the lesser horseshoe bat's foraging habitats. Considering the bats' migratory range and recorded activity, the alteration of foraging habitats could significantly affect bats wintering at the SAC.

Physical changes to the environment / Change in existing environmental pressures: The operation of the wind farm, with its wind turbines, presents a risk of collision for bat species and could potentially displace them. The loss of linear features like hedgerows and treelines could also have a barrier effect. However, the collision risk for the lesser horseshoe bat is deemed low due to their flight behaviour and foraging techniques.

Noise Emissions: Increased human activity from the project could disturb roosting or foraging bats, but the document suggests that since there will be no regular night-time working, the disturbance will not likely have significant effects.

Light Emissions: Lighting could disturb light-sensitive species like the lesser horseshoe bat, making them more vulnerable to predation. However, with no regular night-time working and no ground-level artificial lighting during the operational phase, the disturbance is considered negligible.

Duration of the project: The project's duration might cause displacement and barrier effects due to habitat loss and severance of linear habitats. Despite the low risk of collision, the displacement due to habitat alteration is identified as having a potential significant effect.

In-combination Effects: When considering the potential combined effects with other projects, there's a concern about habitat loss and barrier effects. However, the assessment indicates no likely significant in-combination effects from collision risks.

10.2.33. For the other potential impacts assessed (such as land-take/excavations for grid connection, resource requirements, emissions to air, emissions to water, waste emissions, and transportation requirements), the report concludes there are no likely significant effects due to either the absence of a pathway or receptor or because the activities do not intersect with the bats' habitats or behaviours.

10.2.33.1. ***Potential for likely significant effects on the Slievefelim to Slivermines Mountains SPA from the proposed project***

Land-take / Excavations (Site and BEMP): The construction of the wind farm will result in the loss and alteration of various habitats, but the ornithological assessment found that the area is not of significant importance for hen harriers. No likely significant effects on hen harrier are predicted due to the low usage of the area by this species and the significant distance from the SPA.

Land-take / Excavations (Grid Connection and TDR): Vegetation disturbance will be localised and temporary, primarily along public roads. These areas are of low ecological value and not important for hen harriers. No likely significant effects are predicted.

Physical changes / Change in Existing Environmental Pressures: The construction and operation of the wind farm may result in habitat loss and alteration, but the evidence suggests a negligible effect on hen harriers due to low activity levels in the area and lack of ecological linkage to SPAs designated for the species.

Resource Requirements: The extraction activities at existing quarries are not predicted to affect the hen harrier. No likely significant effects are predicted.

Emissions to Air: The emissions resulting from construction activities are not expected to have significant effects on hen harrier due to the temporary nature of the impacts and the limited use of the site by the species.

Noise Emissions: Noise from the construction and operation of the wind farm could potentially disturb hen harriers, but due to screening vegetation and the limited use of the site by the species, no likely significant effects are predicted.

Emissions to Water and Waste Emissions: Any emissions to water from the project are not expected to affect the hen harrier, as the species is not dependent on aquatic habitats and there's a lack of hydrological connectivity with the SPA.

Transportation Requirements: The increase in traffic volumes is not expected to have significant effects due to the absence of a pathway or receptor for such impacts.

Duration of the Project: The document suggests that the project is unlikely to have significant effects on hen harriers in terms of displacement, barrier effects, or collision risks throughout the lifetime of the project.

In-combination Effects: The assessment concludes that there are no likely significant in-combination effects on the hen harrier from habitat loss, barrier effects, or collision risk when considering other projects in the area.

10.2.34. Overall, the report concludes that there are no likely significant effects on the hen harrier from the proposed wind farm project. This is based on the evidence that the project area is not of significant importance for the species, has low usage by hen harriers, and is located at a considerable distance from the SPA.

10.2.34.1. ***Potential for likely significant effects on the River Shannon and River Fergus Estuaries SPA from the proposed project***

Land-take / Excavations (Site and BEMP): Construction will result in habitat loss and alteration, but the assessment concludes there will be no significant effects on waterbirds, as the habitats affected are not of value to these species.

Land-take / Excavations (Grid Connection and TDR): Vegetation disturbance will be localised and temporary, affecting areas of low ecological value. No significant effects on waterbird habitats are anticipated.

Physical changes / Change in Existing Environmental Pressures: While the construction will lead to habitat alteration and the operation of wind turbines may pose a barrier effect and collision risk, the report states there is no significant effect predicted due to the very low collision risk and low activity levels of SCI species within the relevant area.

Resource Requirements: The extraction activities at the proposed aggregate sources, which are existing quarries, are not expected to affect SCI species.

Emissions to Air: The construction and decommissioning processes will generate emissions, but the limited suitability of habitats at the site for SCI species and lack of

records of such species using the site mean there are no pathways for significant effects.

Noise Emissions: Increased noise levels from human activity and turbine operation are not expected to significantly disturb SCI species due to the limited suitability of habitats for these species at the site and the pre-existing noise levels from traffic.

Emissions to Water and Waste Emissions: The document indicates a potential for likely significant effects due to sedimentation and changes in water quality, which could indirectly affect the foraging habitat of waterbirds.

Transportation Requirements: No likely significant effects are expected from transportation due to the low scale of works and the presence of screening vegetation.

Duration of the Project: Throughout the construction, operation, and decommissioning stages, the project is not expected to have a significant effect on SCI species, with an effective collision risk of zero determined for species such as the cormorant.

In-combination Effects: The assessment acknowledges the potential for likely significant in-combination effects related to water quality, which could indirectly impact the foraging habitat of waterbirds. However, no likely significant in-combination effects are predicted concerning collision risks or barrier effects due to the low activity levels of SCI species and the substantial distance between the project site and the SPA.

10.2.35. In conclusion, the assessment finds no likely significant effects on SCI species for most of the factors considered, except for potential indirect impacts on waterbird foraging habitat due to changes in water quality, which are considered a likely significant effect.

10.2.35.1. ***Potential for likely significant effects on the Slieve Aughty Mountains SPA from the proposed project***

Land-take / Excavations (Site and BEMP): The construction will lead to habitat loss and alteration, but no significant effects are predicted for hen harrier and merlin due

to the lack of suitable nesting habitat within the 500m turbine buffer and low usage by these species.

Land-take / Excavations (Grid Connection and TDR): Vegetation disturbance will be localised and temporary, with no significant effects expected due to the marginal value of the vegetation and the area being subject to existing disturbances.

Physical Changes / Change in Existing Environmental Pressures: Despite habitat loss and potential barrier effects from wind turbines, no significant effects are expected for hen harrier and merlin due to the low activity levels recorded and the lack of ecological linkage to SPAs designated for these species.

Resource Requirements: Activities at existing quarries are not predicted to affect hen harrier or merlin.

Emissions to Air: The temporary nature of construction emissions and the limited usage of the site by hen harrier and merlin lead to no expected significant effects.

Noise Emissions: Increased human presence and turbine noise are not expected to significantly affect hen harrier and merlin due to existing noise levels from traffic and the presence of screening vegetation.

Emissions to Water and Waste Emissions: No significant effects are expected since these species are not dependent on aquatic habitats and there's no hydrological connectivity with the SPA.

Transportation Requirements: The increase in traffic volumes is below thresholds that would lead to significant effects.

Duration of Construction, Operation, Decommissioning: No significant effects are anticipated during the different stages of the project's lifecycle due to the low likelihood of habitat loss, displacement, or collision risks.

In-combination Effects: No likely significant in-combination effects are predicted due to the low level of recorded activity for hen harrier and merlin and the distance from the SPA.

10.2.36. The assessment concludes that the proposed wind farm project is not likely to have significant effects on the conservation objectives of the Natura 2000 site

concerning hen harrier and merlin populations. This conclusion is based on the low recorded activity of these species at the project site, the distance of the site from the SPA, and the absence of suitable habitat for these species within the turbine buffer area.

10.2.36.1. ***Potential for likely significant effects on Curraghchase Woods from the proposed project***

10.2.37. The primary concern is the physical changes to the environment, specifically the transport of invasive species. This issue arises from the movement of these species from other locations to the site, potentially spreading through machinery used in the project. This could significantly impact the terrestrial Qualified Interest (QI) habitats, making it a likely significant effect. However, for all other categories, including land-take/excavations, resource requirements, emissions to air, noise emissions, emissions to water, waste emissions, transportation requirements, the duration of construction, operation, decommissioning, and in-combination effects, the report indicates no likely significant effects.

10.2.38. **Conclusion**:

10.2.39. Having examined the information presented in the Appropriate Assessment Screening Report and supporting documentation, submissions, the nature and location of the proposed development and its likely direct, indirect and cumulative effects, the source pathway receptor principle, proximity and functional relationship between the proposed development and the European sites, their conservation objectives and taken in conjunction with my assessment of the subject site and the surrounding area, I conclude that the proposed development could result in significant effects on the qualifying interests of the Lower River Shannon SAC, River Shannon and River Fergus Estuaries SPA, Danes Hole, Poulnalecka SAC and Curraghchase Woods SAC, and that a Stage 2 Appropriate Assessment is required to determine if adverse effects on site integrity can be ruled out.

10.2.40. **Screening Determination**

10.2.41. The proposed development was considered in light of the requirements of Section 177U of the Planning and Development Act 2000 (as amended). Having

carried out Screening for Appropriate Assessment of the project, I conclude that the project individually or in combination with other plans or projects could have significant effects on the following Natura 2000 European Sites;

- Lower River Shannon SAC (002165)
- River Shannon and River Fergus Estuaries SPA (004077)
- Danes Hole, Poulnalecka SAC (000030)
- Curraghchase Woods SAC (000174)

10.2.42. In consideration of these site's Conservation Objectives, it is my view that a Stage 2 Appropriate Assessment is therefore required.

10.2.43. No pathways for likely significant effects on any other European sites, were identified. Therefore, it can be excluded on the basis of objective information that the proposed project (the wind farm site, grid connection, TDR and biodiversity enhancement areas) individually or in combination with other plans and projects, will have a significant effect on the following European sites (or any other European sites):

10.2.44. No pathways for likely significant effects on any other European sites have been identified. Therefore, based on objective information, it can be concluded that the proposed project—including the wind farm site, grid connection, TDR, and biodiversity enhancement areas—will not have a significant effect on the following listed European sites, either individually or in combination with other plans and projects:

- Slieve Bernagh Bog SAC (002312)
- Glenomra Wood SAC (001013)
- Lough Derg (Shannon) SPA (004058)
- Slievefelim to Slivermines Mountains SPA (002319)
- Clare Glen SAC (000930)
- Kilkishen House SAC (004077)
- Silvermines Mountains West SAC (002258)
- Slieve Aughty Mountains SPA (004168)
- Barrigone SAC (000432)
- Askeaton Fen Complex SAC (002279)

10.2.45. On this basis, I conclude that these Natura 2000 Sites should be screened out and do not require Stage 2 Appropriate Assessment.

10.3. Stage 2 - Appropriate Assessment

10.3.1. The requirements of Article 6(3) as related to Appropriate Assessment of a project under part XAB, Sections 177U and 177V of the Planning and Development Act 2000 (as amended) are considered fully in this section. The areas addressed in this section are as follows:

- Compliance with Article 6(3) of the EU Habitats Directive.
- Screening the need for appropriate assessment.
- The Natura Impact Statement and associated documents.
- Appropriate Assessment of implications of the proposed development on the integrity of each European site.

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

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

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

10.3.5. Screening the need for Appropriate Assessment

10.3.6. Following the screening process, it has been determined that Appropriate Assessment is required as it cannot be excluded that the proposed development, individually or in combination with other plans or projects, will not have a significant effect on the following Natura 2000 European sites;

- Lower River Shannon SAC (002165)
- River Shannon and River Fergus Estuaries SPA (004077)
- Danes Hole, Poulnalecka SAC (000030)
- Curraghchase Woods SAC (000174)

10.3.7. **The Natura Impact Statement (NIS)**

10.3.8. This Appropriate Assessment is based on the Natura Impact Statement (dated January 2023) submitted as part of the planning application to Clare County Council. The NIS examines and assesses potential adverse effects of the proposed development on the following Natura 2000 European Sites.

- Lower River Shannon SAC (002165)
- River Shannon and River Fergus Estuaries SPA (004077)
- Danes Hole, Poulnalecka SAC (000030)
- Curraghchase Woods SAC (000174)

10.3.9. The Natura Impact Statement (NIS) was informed by a comprehensive array of studies and surveys, as detailed in Section 1.2.3 of the document. These included a desktop study encompassing relevant plans, publications, data, and datasets, alongside an examination of aerial photography and maps. Additionally, various specific surveys were conducted, comprising an Aquatic Survey, a Botanical Survey, a Mammal Survey, and Habitat Surveys. Furthermore, the study involved an Ecological walkover survey, a Marsh Fritillary survey, Bat Surveys, and Bird surveys.

10.3.10. Findings are presented in reports Vol 3, which include (*inter alia*) Appendices presenting various documents such as the Biodiversity Enhancement and Management Plan, Invasive Species Management Plan, CEMP, Ornithological report, Aquatic Ecology Assessment, Bat and Otter Surveys and Surface Water Management Plan.

10.3.11. The NIS provides a list of the publications, data and datasets consulted in the preparation of the Natura Impact Statement (NIS). Having reviewed the NIS, supporting documentation and submissions, I am satisfied that together these documents provide adequate information in respect of the baseline conditions, use the best scientific information available on European sites, and clearly identify potential

adverse impacts. Details of mitigation measures and how and when they will be implemented are detailed in Section 4.6 of the NIS. I am satisfied that the information is sufficient to allow for a complete assessment of the proposed development in view of the requirements of Appropriate Assessment, and precise and definitive findings can be reached with regard to the implications of the project on European Sites.

10.3.12. **Appropriate Assessment of the implications of the proposed development on each European site**

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

10.3.14. I have relied on the following guidance:

- EC (2021) Commission Notice on the assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC
- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC.
- EC (2011) Guidelines on the implementation of the Birds and Habitats Directives in Estuaries and coastal zones.
- DoEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, National Parks and Wildlife Service. Dublin.
- EC (2002) Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EC.

10.3.15. **Information on the Natura 2000 sites likely to be affected**

10.3.16. The following sites are subject to Appropriate Assessment.

- Lower River Shannon SAC (002165)

- River Shannon and River Fergus Estuaries SPA (004077)
- Danes Hole, Poulnalecka SAC (000030)
- Curraghchase Woods SAC (000174)

10.3.17. A description of theses Natura 2000 sites likely to be affected, the species and habitats significantly present on the site (designating features) and their conservation objectives is provided below.

10.3.17.1. ***Lower River Shannon SAC (002165)***

10.3.18. The Lower River Shannon Special Area of Conservation (SAC) encompasses a large area along the Shannon valley from Killaloe to Loop Head/Kerry Head, covering c. 120 km. This includes several river estuaries, a range of freshwater stretches, and a marine area. The geology of the area is diverse, with Carboniferous limestone, Namurian shales and flagstones, and Old Red Sandstone at Kerry Head.

10.3.19. Ecologically, the Shannon and Fergus estuaries form the largest complex of this kind in Ireland, rich with intertidal mudflats, saltmarshes, and varied freshwater, terrestrial, and marine habitats. Species of note include Annex I and II species such as the Bottle-nosed Dolphin and all three Irish lamprey species. Additionally, priority habitats like lagoons and alluvial woodlands, and various Red Data Book species, including Triangular Club-rush, are present.

10.3.20. The main threats identified in the NIS include urbanisation, aquaculture, air pollution, and invasive species, which are detailed in Table 4-1. Conservation efforts are directed at maintaining these habitats and species, especially those of annexed interest under the EU Habitats Directive.

10.3.21. As per the NIS, Ecofact Environmental Consultants conducted a comprehensive suite of aquatic surveys in September 2021, with follow-ups in spring 2022 for spawning lamprey. These surveys encompassed habitat assessment, biological water quality, salmonid and juvenile lamprey surveys, and otter surveys at grid connection crossings. A total of 23 watercourses potentially affected by the proposed wind farm and its associated grid and turbine delivery routes were selected for detailed assessment. Biological water quality sampling was carried out at 11 representative sites, while fisheries assessments were conducted at 10 locations with

habitat appraisals performed at an additional 11 sites. Some sites were not suitable for electrofishing, and two were dry during the survey period.

10.3.22. The surveys followed methodologies outlined Appendix 7 of the NIS and aimed to provide an informed ecological evaluation of the sites in the context of the wind farm development. The watercourses surveyed include various segments of the River Black, River Bridgetown, Broadford River, River Blackwater, Glenomra Wood Stream, River Ballyard, River Ardcloony, River Kilmastulla, River Roolagh, and River Ballyteige within the Lower Shannon catchment. This data will contribute to the appropriate assessment report for the wind farm project.

10.3.23. A desk study as part of the NIS included a review of previous surveys and databases to assess the aquatic ecology relevant to a Natura 2000 European Site. In 2013, Inland Fisheries Ireland documented six fish species in the Broadford River. A 2016 survey on the River Kilmastulla identified seven fish species. The National Biodiversity Data Centre and NPWS data were consulted, noting species like the European otter and various lampreys, but no new relevant records were found.

10.3.24. An aquatic ecology assessment for the Killaloe Bypass noted the presence of invasive zebra mussels. It was determined that the river substrate in the surveyed area is not conducive to salmon spawning, and while lampreys have been recorded in Lough Derg, the spawning suitability for lamprey in the vicinity of the Killaloe bypass bridge crossing was also deemed unsuitable.

10.3.25. The NIS provides details of EPA data which monitors the biological water quality of rivers and river catchments within the Lower River Shannon SAC relevant to a proposed wind farm project. These catchments include the following:

River Black [O'Briensbridge]:

- Located in Co. Clare, originating from Lackareagh Mountain and joining the River Shannon.
- Rated Q4 ("Good" status) in 2021.
- Not at risk of failing to meet Water Framework Directive (WFD) objectives by 2027.
- Contains six of the eight proposed wind turbine sites.

Broadford River:

- Rises in the west of the site and drains into the River Shannon estuary via Doon Lough and River Owenogarney.
- Upper reaches are at risk of not meeting WFD objectives by 2027 due to pressures like invasive species and agriculture.
- Monitored at Scott's Bridge with a Q3-4 rating ("Moderate" status) in 2019 and at Graffa Bridge with a Q4 rating ("Good" status).
- Includes two of the eight proposed turbine sites.

River Blackwater [Clare]:

- Originates near Woodcock Hill, Co. Clare, and flows into the River Shannon.
- The section near the Shannon is part of the Lower River Shannon Special Area of Conservation.
- Two out of four waterbodies within the catchment are at risk of not meeting WFD objectives, mainly due to forestry and agriculture.
- Monitored at two points with Q4-5 and Q4 ratings, indicating "High" and "Good" statuses in 2021, respectively.

Ardcloony River:

- Originates from Ballycuggaran near Moylussa, joins River Shannon at Parteen Reservoir.
- EPA monitoring in 2019 rated its water quality as Q4 ("Good").
- Crossed by the turbine delivery route (TDR) but not directly draining the wind farm site.
- Designated as part of the Lower River Shannon Special Area of Conservation (SAC) near Parteen Reservoir.

Ballyteige 25 River:

- Rises in Ballycuggaran, joined by two 1st order streams, drains forestry and agricultural lands.
- "At risk" of not meeting Water Framework Directive (WFD) objectives by 2027 due to eutrophication and physical modifications.
- Part of the Lower River Shannon SAC immediately downstream of TDR Node 20.

- No recent EPA monitoring in the vicinity of the TDR crossing.

River Ballyard 15:

- A small 1st order waterway in the River Mulkear catchment, crossed by the TDR at Birdhill, Co. Tipperary.
- No EPA monitoring stations, considered "Not at Risk".
- No proposed works impacting the river.

River Kilmastulla:

- Rises in Silvermines, joined by several tributaries, flows into Parteen Reservoir.
- "At Risk" of not meeting WFD objectives, with pressures including mining.
- The section from Parteen Reservoir to the confluence with River Knocknadromin is within the Lower River Shannon SAC.
- No proposed works impacting the river by the TDR.

Roolagh River:

- Originates east of Ballina, drains into Parteen Reservoir.
- "At Risk" of not meeting WFD objectives, with wastewater discharge and physical barriers as pressures.
- No EPA monitoring stations, "Moderate" WFD status from 2013-2018.
- Crossed by the TDR with no works proposed to impact the river.

10.3.26. The aquatic surveys for the NIS included an assessment of fish populations, habitat, and otter presence in relation to a Natura 2000 European Site. The findings are summarised below:

10.3.27. Fish Surveys: Out of the sites surveyed, 22% did not support fish or fisheries habitat, often due to non-perennial or seasonal channels. Brown trout was the most frequently observed species, found at eight locations. Salmon was present at two sites. Brook lamprey was recorded at five sites and river lamprey at one. Other species like three-spined stickleback, stone loach, and minnow were also observed.

10.3.28. Freshwater Pearl Mussel and White-clawed Crayfish: Neither freshwater pearl mussels nor white-clawed crayfish were detected during the surveys.

10.3.29. Annex I Habitat: Aquatic vegetation associated with the Annex I habitat of ‘floating river vegetation’ was identified at one site on the Blackwater (Clare) river, which is upstream of the Lower River Shannon SAC.

10.3.30. Invasive Species: No non-native invasive species were found during the surveys.

10.3.31. Otter Survey: Evidence of otters was found at two sites, including within the Lower River Shannon SAC. Otter prints and other signs of activity were noted, but no active holts or spraints were discovered. Otter activity was also observed at the Glemomra stream grid crossing.

10.3.32. Other Grid Crossing Locations: Several other grid crossing locations lacked sufficient fisheries potential to support otters, and no signs of otters were recorded there.

10.3.33. Biological Water Quality: In the assessment of biological water quality for the Natura 2000 European Site, nine sites achieved a rating of ≥Q4, reflecting 'good status' for water quality. Five sites were deemed to have 'moderate status' with a Q3-4 rating, and four sites were categorized as having 'poor status' with a Q3 rating. Some sites could not be evaluated due to their non-perennial nature or because they had been recently dredged.

10.3.34. Table 4-4 of the NIS provides details of the potential occurrence of qualifying interests in watercourses connected to the proposed development and the Lower River Shannon SAC, which is summarised as follows:

- Freshwater Pearl Mussel: Not present downstream of the proposed project area.
- Sea Lamprey: Unlikely to occur upstream of Parteen weir; no recordings at survey sites but potential indirect effects in the Shannon below Parteen weir.
- Brook Lamprey: Recorded at three sites in the Rivers Black and Bridgetown, and Blackwater (Clare), with the closest site approximately 500m upstream from the SAC.
- River Lamprey: Recorded at Blackwater (Clare), with potential indirect effects due to a culvert blocking upstream migration.
- Atlantic Salmon: Recorded at two sites, with possible indirect effects on spawning and nursery habitats.

- Other Habitats (Sandbanks, Estuaries, Mudflats, Coastal Lagoons, Large Shallow Inlets, Bays, Reefs, Stony Banks Vegetation, Vegetated Sea Cliffs, Salt Meadows, Bottlenose Dolphin): Not present at or near the Site, GCR, or TDR.
- Otter: Confirmed present in the Ballyteige 25 within the SAC and in the Blackwater (Clare) catchment, with potential range overlapping the SAC.
- Water Courses with Specific Vegetation: Present in the lower reaches of Blackwater (Clare) and at survey site 11 downstream of GCR.
- Molinia Meadows: Wet grassland with links to this habitat is present at the Site but not ecologically linked to the SAC habitat.
- Alluvial Forests: Occur along larger rivers, not in areas directly affected by the project, but indirect effects are considered possible on a precautionary basis.

10.3.35. The Lower River Shannon Special Area of Conservation (SAC) features various species potentially influenced by the proposed wind farm, its grid connection, turbine delivery route (TDR), and Biodiversity Environmental Management Plan (BEMP) areas:

- Atlantic salmon (Salmo salar): Recorded downstream from the project areas; their habitat extends downstream of the wind farm, grid connection, and TDR. Salmon populations are evaluated as 'inadequate' in Ireland and are affected by water quality and obstructions to migration, such as hydro-electric stations and weirs.
- Sea Lamprey (Petromyzon marinus): Not observed at survey sites and unlikely to be upstream of Parteen Weir; they could be indirectly affected by water quality changes.
- Brook Lamprey (Lampetra planeri): Found in rivers affected by the project; they are mobile and potentially related to the SAC habitats.
- River Lamprey (Lampetra fluviatilis): Present in the Blackwater (Clare) River; their upstream movement may be hindered by culverts and they could be indirectly affected by water quality.
- Otter (Lutra lutra): Active in the SAC and along rivers affected by the project; they could be indirectly affected by changes in water quality and prey availability or directly through disturbance.

- Habitats with specific vegetation (Ranunculion fluitantis and Callitricho-Batrachion): Located downstream of GCR within the SAC; potential indirect effects from water quality changes.
- Alluvial forests (with Alnus glutinosa and Fraxinus excelsior): May be indirectly affected by water quality changes.

10.3.36. The Atlantic salmon, protected under EU Habitats Directive and the Bern Convention, is recognised as an important anadromous species within the Lower River Shannon SAC. Recent assessments classify their status as 'inadequate' due to obstacles like hydroelectric stations that impede their migration and spawning, crucial for their life cycle and population sustainability. The quality of water, particularly clean water necessary for spawning, is under threat mainly from pollution due to agricultural runoff and wastewater, which could severely affect salmon populations.

10.3.37. Otters, another species listed in the EU Habitats Directive, found within the SAC, had a positive presence in 70% of surveyed sites. Although this is below the targeted 88% based on past surveys, otters are widespread across the catchment area. The habitat type characterised by floating or submerged vegetation, like water-crowfoots, is critical for otters, river lamprey, and Atlantic salmon. This habitat, beneficial for riverine species, is at risk from anthropogenic changes and pollution, which also threaten the species reliant on these ecosystems.

10.3.38. Brook lamprey, endemic to Ireland's freshwaters, is non-parasitic and has a 'Favourable' conservation status. In contrast, sea lamprey and river lamprey are anadromous, migrating from the sea to spawn in freshwater, and have 'Bad' and 'Unknown' conservation statuses, respectively. Key to their life cycle is their preference for gravel substrates for spawning and silt or sand for juvenile habitats, with migration barriers in the Shannon posing a risk. The brook lamprey is threatened by water pollution and sediment removal, while sea lamprey's habitat is considered 'Inadequate', though its population trend is 'Stable'.

10.3.39. Regarding alluvial forests with Alnus (alder) and Fraxinus (ash), these ecosystems within the SAC comprise gallery woodlands and wet willow-alder-ash woodlands. Gallery woodlands, subjected to frequent flooding, are located upstream of Limerick and feature a canopy dominated by white willow and a rich herbaceous layer with species such as creeping bent and Himalayan balsam. The wet woodlands

are rich in alder and ash, with a diverse ground layer including meadowsweet and various ferns. These habitats are critical for the site's biodiversity and are affected by environmental pressures such as water modification and invasive species.

10.3.39.1. ***Danes Hole, Poulnalecka SAC (000030)***

10.3.40. The Danes Hole, Poulnalecka SAC, is a key habitat for the Lesser Horseshoe Bat, located within a wooded area near Broadford, Co. Clare. The site, of international importance due to its bat population, includes a small fossil cave used for winter hibernation and mating, alongside a nearby summer roost. The cave, which extends c. 50 meters, ends in a sump that does not flood other parts. The surrounding broadleaved woodland, featuring species like Oak, Birch, and Holly, provides essential foraging and shelter for the bats.

10.3.41. Conservation objectives for this site focus on preserving the bats' hibernation and mating sites, as well as their foraging habitats. The main threats identified include the removal of hedgerows, copses, or scrub, improved access to the site which could lead to disturbance, and grazing within the woodland area. Such activities could potentially cause a decline or extinction of the species, emphasizing the need for careful management to ensure no adverse effects from the wind farm development. The ecological connectivity with the proposed wind farm development requires careful assessment to avoid any impacts on these habitats and species.

10.3.42. Woodrow Solutions conducted bat surveys for the Natura 2000 site, including roost, emergence, winter inspections, and activity assessments through walked/driven transects and static detectors in 2020 and 2021. The static detector data was analysed using Ecobat to evaluate bat activity at the site and proposed turbine locations. A desk study revealed 41 bat records within 10km of the site, including two lesser horseshoe bat roosts. Field surveys identified beech woodland with moderate to high roost potential. Detailed assessments using thermal imaging and endoscopic examination of accessible trees were performed. A specific tree with severe butt rot showed no evidence of bats, ensuring no immediate roosting within that area.

10.3.43. Winter roost inspections at a beech tree with severe butt rot and surrounding structures within the proposed wind farm site revealed some evidence of bat activity. Although only two faecal samples were found at the beech tree, suggesting infrequent use as a hibernation roost, signs such as moth wings and a detritus layer indicated it

could serve as a night roost during active seasons. At a nearby derelict cottage, several faecal samples were found, some potentially recent, indicating the structure's likelihood as a hibernation roost. Genetic analysis of samples from the cottage's fireplace confirmed the presence of lesser horseshoe bats with a 99.5% match.

10.3.44. Roost emergence/re-entry surveys identified a soprano pipistrelle roost of approximately 54 bats near the site, a common pipistrelle single bat roost in the derelict cottage, and a lesser horseshoe bat re-entering this cottage.

10.3.45. Transect surveys conducted across various dates in 2020 and 2021 recorded several bat species, including Myotis, Nyctalus leisleri, common pipistrelle, soprano pipistrelle, and Plecotus auritus. The number of bat passes varied, with notable activity of pipistrelles in beech woodland and conifer plantation areas.

10.3.46. Static bat detector surveys adhering to SNH guidelines were conducted at the proposed wind farm site and adjacent areas during 2020 and 2021. These surveys aimed to gauge bat activity levels using the Ecobat tool, which classifies bat activity as low, moderate-low, moderate, moderate-high, or high, based on percentile scores.

10.3.47. Analysis of the site-wide data indicated that common and soprano pipistrelles exhibited high activity levels, Leisler's bats were at moderate/high, and Myotis species showed moderate activity. Lesser horseshoe bats, Nathusius' pipistrelles, and brown long-eared bats displayed low activity levels. Between the two years, there was a notable change in soprano pipistrelle activity, which dropped to moderate/high, and Nathusius' pipistrelle increased to moderate/low.

10.3.48. The surveys suggest that the proposed wind farm could have varying impacts on different bat species based on their activity levels in the area, in particular the significant presence and high activity of common pipistrelles.

10.3.49. Analysing bat activity and vulnerability to wind farm impacts at the Fahy Beg Wind Farm site involved a detailed risk assessment using the Ecobat tool, following SNH guidelines. The assessment revealed high vulnerability for Leisler's bat, Nathusius' pipistrelle, soprano pipistrelle, and common pipistrelle. These species showed varying activity levels, with common pipistrelles being the most active. In contrast, Myotis species, brown long-eared bats, and lesser horseshoe bats displayed low vulnerability and lower activity levels.

10.3.50. The regional importance of bat populations at the site ranges from local to regional significance, with common pipistrelle bats holding the highest regional importance. In terms of collision risk with the proposed wind turbines, Leisler's bat and common pipistrelle were at higher risk due to their high activity levels and regional importance.

10.3.51. For the Danes Hole, Poulnalecka SAC, the Lesser Horseshoe Bat is a qualifying interest that may be influenced by the wind farm, recorded in low numbers foraging and roosting at the proposed site. However, no ecological connection with the proposed development was identified for caves not open to the public or old sessile oak woods within the SAC.

10.3.52. The Lesser Horseshoe Bat is at the northern and western edge of its range in Ireland, limited to six counties on the west coast. Ireland remains a stronghold for the species despite declines in other parts of Europe. Unique among Irish bats for its 'noseleaf' used in echolocation, this species wraps itself with its wings while resting and feeds by gleaning insects from foliage and ground, often returning to the same summer roosts annually, which are typically in old or derelict buildings' attics. For hibernation, they use caves and man-made structures like cellars, all emphasized in their Annex I habitat designation 'Caves not open to the public'. They forage in deciduous woods and riparian zones, relying on linear landscape features to navigate and are averse to open-space flying. The species is disturbance-sensitive, shunning human-occupied buildings. Key threats include the loss of roosts and commuting routes due to building renovation or landscape changes, and poor management of foraging sites. Conservation efforts must consider these bats' roost fidelity, reliance on certain habitats, and vulnerability to disturbance.

10.3.52.1. ***River Shannon and River Fergus Estuaries SPA (004077)***

10.3.53. The River Shannon and River Fergus Estuaries SPA represents Ireland's most significant estuarine complex, spanning from Limerick City to Doonaha in County Clare and Dooneen Point in County Kerry. It is recognised as a Special Protection Area (SPA) under the EU Birds Directive, specifically for its expansive intertidal flats, which sustain a diverse macroinvertebrate community and, consequently, an abundant food source for over 20,000 wintering waterbirds. The surrounding salt marshes provide essential high tide roosting areas.

10.3.54. This SPA is critically important for numerous species, including the Light-bellied Brent Goose, Dunlin, Black-tailed Godwit, and Redshank, which are of international significance, while 17 other species are nationally significant. The area also supports a notable breeding population of Cormorants. Additional species, such as the Mute Swan and Oystercatcher, use the site during migration seasons. Notably, the Whooper Swan, Golden Plover, and Bar-tailed Godwit, all Annex I listed in the EU Birds Directive, are regulars at the site. Certain parts of the SPA are designated as Wildfowl Sanctuaries.

10.3.55. Threats to this SPA include discharges and urbanisation within and adjacent to the site, along with pressures from nautical sports, shipping lanes, and marine aquaculture. Fertilization is another concern, highlighting the need for management focused on mitigating these impacts to maintain the site's integrity, particularly in light of the wind farm development.

10.3.56. Comprehensive bird surveys, including vantage point watches, transect surveys, breeding raptor surveys, hen harrier roost searches, and wintering waterbird surveys, were conducted over two years by Woodrow Solutions at the proposed wind farm site. These surveys informed the NIS for the River Shannon and River Fergus Estuaries SPA, a critical habitat for numerous wetland and waterbirds, connected hydrologically to the wind farm site through the Black and Broadford Rivers.

10.3.57. Vantage point surveys recorded several bird species of special conservation interest, including the black-headed gull, cormorant, curlew, golden plover, and lapwing, as well as other relevant species like the greylag goose, whimbrel, herring gull, and lesser black-backed gull. Gull activity near the turbines was relatively low, with only infrequent observations at collision risk heights. Similarly, minimal activity was recorded for wildfowl, suggesting the site is not on a major commuting route. Wader observations were low, with species like curlew, lapwing, and whimbrel seen commuting through the area, indicating limited use of the site for breeding or foraging.

10.3.58. Only a single commuting flight of cormorants was recorded within the 500m turbine buffer zone, leading to the conclusion that the proposed wind farm site is not significant for this species and is unlikely to impact populations in the wider area.

10.3.59. Hinterland surveys during the breeding seasons of 2020 and 2021 around the proposed wind farm site recorded low numbers of Lesser black-backed gulls,

Cormorants, Mallards, and Whooper swans within a 2 km radius. Notably, a flock of 29 Whooper swans was observed just outside this radius in April 2021.

10.3.60. Wintering waterbird surveys indicated limited activity within the 2 km turbine buffer zone, with most waterbird activity occurring along the River Shannon, c. 3 km southeast of the development. A pair of commuting Mallards were the only waterbirds noted within the survey area, suggesting an absence of sensitive wintering waterbird populations within the wind farm's zone of influence, especially Whooper swans or migratory geese.

10.3.61. The lack of suitable wetland habitats within the 2 km buffer for roosting swans or geese led to the decision that additional waterbird surveys in the second winter period (2020-21) were unnecessary. Transect surveys in both breeding and winter seasons recorded no relevant species for the SPA, with only two wader species (Snipe and Woodcock) noted during winter.

10.3.62. The SPA is designated for 21 waterbird species and the broader category of 'Wetland and Waterbirds'. Given their dependence on aquatic and wetland habitats in the Shannon estuary, these species could be vulnerable to changes in water quality from upstream construction activities.

10.3.62.1. ***Curraghchase Woods SAC (000174)***

10.3.63. Curraghchase Woods SAC is a vital site for the Lesser Horseshoe Bat, where over 60 individuals were recorded in 1995/96 as hibernating in the cellars of the former Curraghchase House, now protected to prevent disturbance. This site is the largest known for this species in County Limerick and is rated of international importance due to the secure hibernation and favourable foraging habitats provided by the surrounding deciduous and coniferous woodland. The presence of over 60 bats and the conservation importance of the woodland make Curraghchase Woods a site of international significance for the conservation of the Lesser Horseshoe Bat.

10.3.64. The woodlands consist of a variety of tree species, including beech, oak, and spruce, as well as areas of hazel scrub and wet woodland, adding to the site's habitat diversity. Alluvial forests, mainly composed of willow and alder, are found in the southern part of the site, while a yew wood, unusual in Ireland, stands on a limestone ridge. These woodlands are crucial foraging grounds for the Lesser Horseshoe Bat.

10.3.65. Additionally, the SAC hosts an important population of Desmoulin's Whorl Snail, particularly around the lakes where the preferred habitat is fringed by Carex acutiformis. This species is at its most southwesterly extant location on the site.

10.3.66. In terms of conservation objectives, maintaining the integrity of the Lesser Horseshoe Bat's hibernation and foraging habitats is crucial. The prevention of further conifer planting at the expense of deciduous species is recommended, alongside efforts to expand the area of deciduous woodland to support the bat population.

10.3.67. Field surveys along the turbine delivery route (TDR) did not find mature trees requiring trimming within the SAC or invasive species in mature treelines near the SAC. No suitable habitats for Desmoulin's Whorl Snail were identified within or near the TDR footprint. Lesser Horseshoe Bats, not using trees for roosting, are unaffected by tree trimming along the TDR, and therefore, the site's integrity for bat commuting or foraging is not compromised.

10.3.68. There is, however, a potential risk that invasive species could spread from other TDR nodes to Curraghchase Woods, potentially affecting the yew wood and the alluvial forests that are designated features of the SAC. This highlights the need for vigilance and management to prevent the establishment and spread of invasive species within Curraghchase Woods SAC.

10.3.69. **Description of the project and its likely potential impacts on the environment.**

10.3.70. A description of the proposed development is provided in Section 2.0 above, informing the Stage 1 Screening the need for Appropriate Assessment. As mentioned previously, the Natura 2000 European sites identified as likely to be affected include:

- Lower River Shannon SAC (002165)
- River Shannon and River Fergus Estuaries SPA (004077)
- Danes Hole, Poulnalecka SAC (000030)
- Curraghchase Woods SAC (000174)

10.3.71. As identified in Section 11.3.15 above, the qualifying interests of these Natura 2000 sites within the zone of influence of the project that may potentially experience adverse effects on their site integrity are as follows:

Lower River Shannon SAC:

- Atlantic salmon
- sea lamprey
- brook lamprey
- river lamprey
- otter
- watercourses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation

Danes Hole, Poulnalecka SAC:

- lesser horseshoe bat

River Shannon and River Fergus Estuaries SPA

- Whooper Swan
- Light-bellied Brent Goose
- Shelduck
- Wigeon
- Teal
- Pintail
- Shoveler
- Scaup
- Ringed Plover
- Golden Plover
- Grey Plover
- Lapwing
- Knot
- Dunlin
- Black-tailed Godwit
- Bar-tailed Godwit
- Curlew
- Redshank
- Greenshank
- Black-headed Gull
- Wetland and Waterbirds

Curraghchase Woods SAC:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*
- *Taxus baccata* woods of the British Isles

10.3.72. The components of the project that have been identified as exerting pressure and causing potential impacts on the qualifying interests of these Natura 2000 European Sites within the zone of influence, include the following:

Construction and Decommissioning:

- Surface Water Runoff: The proposed development's construction activities, such as tree felling, track establishment, and the creation of turbine hardstanding areas,

pose a risk of increased surface water runoff. This could be exacerbated by the presence of suspended solids and nutrients from disturbed soils, particularly in areas of peaty substrate.

- Suspended Solids and Nutrient Pollution: Specific concerns include sediment-laden water from excavations, silt migration from haul roads, and runoff from vehicle movements. Moreover, poorly managed excavations and the movement of excavated materials could exacerbate the loss of suspended solids to watercourses. The construction of new stream crossings and exposure of soil during felling could also contribute to the release of sediments and nutrients.
- Hydrocarbon Pollution: The risk of hydrocarbon pollution arises from refuelling operations, potential spills or leaks from on-site fuel storage, and the trafficking of heavy machinery, which can lead to contamination from fuels and lubricants.

Operation of the Wind Farm:

- Collision Risk and Barotrauma: Bats and birds are at risk of collision with turbine components or may suffer from barotrauma during the operational phase of the wind farm. This risk is assessed based on recorded bat activity levels and habitat suitability, independent of the specific turbine dimensions within the proposed range.

Habitat Disturbance and Loss:

- Wildlife Displacement: The loss of natural habitat through construction could displace sensitive species like bats, which rely on specific feeding and commuting routes. Otters could be affected by the disturbance of their resting sites.
- Light Pollution: Artificial lighting installed for the project could potentially disturb nocturnal species, particularly bats.
- Vegetation Removal: The removal of natural vegetation, including hedgerows and treelines, could result in the loss of crucial foraging and roosting habitats for bats and other wildlife.

Spread of Invasive Species:

- Construction Machinery as Vectors: Construction activities could inadvertently introduce or disperse invasive plant species, further threatening local biodiversity and habitat integrity. This includes both high-impact species already present within

the project area and medium/low-impact species that could spread between construction nodes.

Wastewater and Cement-based Contamination:

- Effluent Disposal: Disposal of effluents from wastewater systems could lead to contamination of local water sources.
- Cement Products: The use of cement-based products in construction poses a risk of altering the pH of local water bodies, potentially affecting aquatic life.

Indirect Ecological Impacts:

- Reduction in Prey Species: Adverse changes in water quality from the aforementioned pressures could lead to a reduction in prey availability for predatory species, indirectly impacting their populations.

10.3.73. **In-Combination Effects**

10.3.74. The NIS details the potential in-combination effects of a proposed wind farm project and associated developments with other plans or projects in the area. According to Article 6(3) of the Habitats Directive, the project must be evaluated for its combined impact on the conservation objectives of nearby European sites. The assessment included a review of planning databases and resources from Clare, Limerick, and Tipperary County Councils, An Bord Pleanála, the Irish Wind Energy Association (IWEA), and the Department of Housing, Local Government and Heritage's EIA Portal as of November 24, 2022.

10.3.75. The NIS considers that if the construction phase of the proposed wind farm overlaps with other developments, there may be cumulative effects on the integrity of European sites such as the Lower River Shannon SAC, River Shannon and River Fergus Estuaries SPA, Curraghchase Woods SAC, and Dane's Hole, Poulnalecka SAC. Particular attention is given to the distribution and landscape suitability for bats, as the combined impact of the proposed project with other wind farms could increase collision risks or cause barotrauma, affecting bat populations that utilize these areas for foraging.

10.3.76. Projects with potential connectivity to the Lower River Shannon SAC are identified as having the possibility of combined impacts with the proposed wind farm,

necessitating further detailed assessment to ensure conservation objectives are not adversely affected. These include the following:

Wind Farms

10.3.77. The NIS's assessment indicates that the existing single turbine at J&J Visioncare, situated c. 11.4 km south of Fahybeg, will not contribute to in-combination effects with the proposed development at Fahybeg during construction, as it is already installed. Furthermore, the decommissioning phase of this turbine will not coincide with the proposed development, eliminating the possibility of combined impacts on shared watercourses such as the River Shannon.

10.3.78. The Carrownagowan wind farm, c.5.8 km northwest of Fahybeg, drains to the Lower River Shannon SAC but with its grid connection crossing the Lower River Shannon catchment. The overlapping grid connection with the proposed Fahybeg wind farm along the R471 does not pose a significant in-combination effect according to the assessments. Both the Carrownagowan and Fahybeg projects were evaluated to have localised impacts that would not lead to significant effects on the Lower Shannon SAC, leading to the conclusion that there is no potential for significant in-combination effects with the proposed Fahybeg development.

Solar Energy

10.3.79. The EIAR's assessment for solar energy developments in the vicinity of the proposed wind farm site indicates that seven solar farms, located between 17 to 25 km from the site, have been consented. The assessment concludes that these consented solar projects—ranging in size and located primarily in the Shannon Estuary North catchment—pose no likely significant effects on European sites.

10.3.80. A solar farm project at Ballyvalode, Garryduff, Gortnakistin, Gortyvahane, Keelogs, Kilmacogue, Moanoola, and Moanroe, Co. Limerick, was refused planning permission due to its location within a proposed road project corridor, despite the NIS concluding no adverse effects on the integrity of European sites. This has granted permission on appeal under An Bord Pleanála Re. 312712.

10.3.81. The assessment indicates that no significant in-combination effects with the proposed Fahybeg development are expected from six of the solar projects. The solar

farm at Islandduane, Mungret, Co. Limerick, is on the southern side of the Shannon Estuary and is not anticipated to have significant effects in combination with the proposed development at Fahybeg.

10.3.82. Another solar farm at Ballyvonnavaum, Coolshamroge, Cloonmore, Deerpark, and Manusmore, Ennis, Co Clare, c. 22 km from Fahybeg, is subject to further information request regarding items relevant to the NIS and EcIA. The NIS acknowledges potential in-combination effects with the proposed wind farm during the construction phase. This has since been granted permission under PA Ref. 22/586.

Large Developments

10.3.83. The restoration of Ballyquin Quarry to agricultural grassland is not expected to cause significant effects, nor is it anticipated to impact shared watercourses with the wind farm. The Killaloe Bypass, Shannon Bridge Crossing, and R494 Improvement Scheme are significant infrastructural projects that have been evaluated and found unlikely to adversely affect the integrity of Natura 2000 sites. Similarly, a quarry expansion at Ardnacrusha and a site redevelopment in Limerick City, both within the Lower River Shannon catchment, are consented with the same conclusion regarding European sites.

10.3.84. Projects such as the change of use for a mental health day centre in Limerick City, the construction of a new Irish Water National Laboratory, and a new post-primary school in Mungret have all been granted permission with no expected significant effects on Natura 2000 sites. Alterations to a waste facility in Limerick and the retention and height increase of telecommunications masts in the region have been determined not to contribute to likely significant in-combination effects due to their limited scale and distance from the proposed wind farm. The Urban Greenway in Limerick and the extension for a new public plaza at Colbert Station have been assessed or are pending assessment, with the latter considered to have potential in-combination effects due to the potential for siltation and hydrocarbon pollution via stormwater drainage.

10.3.85. Upgrades at Ardnacrusha hydroelectric station are not expected to significantly affect Natura 2000 sites. However, there is a potential for in-combination effects with

other proposed projects, especially where potential for significant effects has been identified, suggesting the need for a cumulative impact assessment.

Housing

10.3.86. The NIS assesses 21 large housing projects near the proposed wind farm site, concluding that most do not pose significant effects on European sites. However, lacking appropriate assessment data for four projects raises the possibility of in-combination effects with the wind farm. Additionally, 43 smaller developments in the vicinity could cumulatively impact the area.

Hydroelectric Power

10.3.87. For hydroelectric power, while the proposed wind farm won't exacerbate fish migration issues at Ardnacrusha dam's deficient fish pass, it may contribute to in-combination effects related to environmental pollution.

Ongoing Land Management practices

10.3.88. The NIS indicates that the proposed wind farm and grid connection are situated on land currently used for forestry and agriculture, with potential environmental impacts if land management practices allow nutrients or sediment to escape during disturbance. In-combination effects are possible if activities at the wind farm, such as tree felling and construction, occur simultaneously with nearby forestry harvesting or agricultural manure spreading, potentially increasing nutrient load in the Lower River Shannon SAC. While the loss of hedgerows and semi-natural wooded habitats due to the project could combine with losses from agricultural or forestry activities, the impact is mitigated by the fact that the majority of valuable habitats for species like the lesser horseshoe bat will be preserved. The EIAR notes that changes in scrub habitat are a normal part of landscape evolution, balancing between growth, succession to woodland, and clearing.

Plans

10.3.89. The NIS provides details of the Clare, Limerick, and Tipperary County Development Plans which include policies to protect wildlife and European sites, and

require appropriate assessment for future developments. Their implementation, alongside the proposed project's design, is expected to benefit local biodiversity. The NIS also references Irelands River Basin Management Plan 2018-2021 and Inland Fisheries Ireland Corporate Plan 2021-2025, which aim to positively impact biodiversity and water-dependent habitats without contributing to in-combination effects with the proposed project.

10.3.90. **Potential for Adverse Effects on Site Integrity from the proposed development**

10.3.91. Step 2 in assessing the implications of the project in view of the site's conservation objectives, individually or in combination with other plans or projects includes;

- identifying the conservation objectives of the Natura 2000 sites affected by the plan or project;
- identifying and assessing the impacts of the plan or project against the sites' conservation objectives;
- considering cumulative effects with other plans and projects.

10.3.92. Supplementing the assessment include key issues that arose through consultation and through my examination and assessment of the NIS. These include:

- Issues raised in the Planning Authority report, associated technical reports therein, and the reasons for refusal for the proposed project, as detailed in Section 3.0 above.
- Key issues raised by the Development Applications Unit of the Department of Housing, Local Government and Heritage, as detailed in Section 3.4.8 above.
- Issues raised in observations submitted.

10.3.93. The proposed wind farm development is evaluated below for potential impacts on the site integrity of the Natura 2000 European sites identified as likely to be affected include: Lower River Shannon SAC (002165) River Shannon and River Fergus Estuaries SPA (004077), Danes Hole, Poulnalecka SAC (000030), Curraghchase Woods SAC (000174).

10.3.94. An assessment of potential for the proposed development to have adverse effects on the integrity of the identified Natura 2000 European sites is provided with

respect to their qualifying interests which have been identified within the likely zone of influence of the project.

10.3.94.1. ***River Shannon SAC***

10.3.95. The Sea Lamprey (Petromyzon marinus) has a conservation objective to restore its favourable conservation status within the Lower River Shannon SAC. The key attribute for the Sea Lamprey is the distribution, specifically the extent of anadromy, with the measure being the percentage of the river that is accessible. The target set for this species is that greater than 75% of the main stem length of rivers should be accessible from the estuary. The proposed wind farm development is not expected to impede river accessibility, indicating no potential for adverse effects on the Sea Lamprey. Consequently, there would be no duration of effect in the absence of mitigation measures, and the potential for impact in combination with other plans or projects is also non-existent. This leads to the conclusion that the conservation objective for the Sea Lamprey is not at risk from the proposed development.

10.3.96. For the Brook Lamprey (Lampetra planeri) and River Lamprey (Lampetra fluviatilis), the conservation objective is to maintain their favourable conservation condition. Their critical attribute is the distribution, specifically the accessibility of watercourses, measured as the percentage of the river accessible. The target is access to all watercourses down to the first-order streams. The proposed development does not present any barriers to these species' habitat accessibility, and no spawning brook lamprey were recorded at or upstream of the proposed culvert crossings over first-order streams at the site. Therefore, there is no potential for adverse effects, no duration of effect in the absence of mitigation, and no potential effect in combination with other plans or projects. The conservation objective for the Brook and River Lamprey remains secure against the proposed wind farm development.

10.3.97. Atlantic Salmon (Salmo salar), present only in freshwater, has a conservation objective to restore the favourable conservation condition. The critical attribute for the conservation of Atlantic Salmon is the distribution measured by the extent of anadromy. The target is to make 100% of river channels down to second-order accessible from the estuary. Although the proposed development will not introduce barriers to second-order rivers, there is potential for indirect adverse effects due to possible reductions in water quality or pollutants that could impact spawning habitats.

If unmitigated, these effects could be short-term but significant, and there is potential for these impacts to occur in combination with other projects. Therefore, the conservation objective for the Atlantic Salmon depends heavily on the stringent management of water quality during the construction phase.

10.3.98. The Otter (Lutra lutra) has a conservation objective to restore its favourable conservation condition. This species' conservation is gauged by the distribution and extent of its terrestrial habitat, with a measure of the percentage of positive survey sites and hectares above the high-water mark (HWM). While the otter was not present on the site, the proposed clear span bridge could result in the loss of riparian woodland, which could impact the species if they were to utilise the area. This potential impact is assessed as medium-term, and the magnitude of potential effects is very low but not entirely dismissible. Furthermore, there is a possibility of potential effects in combination with other plans or projects, invoking the precautionary principle in anticipation of future changes in otter distribution.

10.3.99. The alluvial forests characterised by species such as Alnus glutinosa and Fraxinus excelsior are critical habitats within the Lower River Shannon SAC, hosting a variety of flora and fauna. The conservation objective for these habitats is to restore and maintain their favourable conservation condition, which includes ensuring the stability or increase of habitat area and distribution, subject to natural processes. The attributes and measures for these alluvial forests include their area in hectares and the occurrence of typical species indicative of a healthy alluvial woodland ecosystem. The target set for these habitats is to maintain, or where possible, increase the current area, ensuring the availability of suitable conditions for the associated species to thrive. Upon examining the potential impacts of the proposed wind farm development, it appears that the project will not lead to a reduction in the habitat area or negatively influence the distribution of these alluvial forests. Therefore, there is no potential for adverse effects from the development itself. There is no expected cumulative impact that would compromise the integrity or conservation status of the alluvial forests. The habitats are projected to remain stable or to improve.

10.3.100. In conclusion, I consider that the proposed wind farm, with the implementation of comprehensive mitigation measures and monitoring, is unlikely to adversely affect the site integrity of the Lower River Shannon SAC. However, it is crucial to monitor the

actual impacts closely, particularly in relation to water quality and habitat integrity, to safeguard the conservation objectives of these species.

10.3.100.1. ***Dane's Hole, Pouolnalecka SAC***

10.3.101. The Lesser Horseshoe Bat is a species of conservation interest with a primary objective to restore and maintain its favourable conservation condition within the SAC. The attributes of concern include population numbers at roosting sites, the condition of winter and summer roosts, the number and condition of auxiliary roosts, the extent of potential foraging habitat, and the preservation of linear features and light pollution levels near roosts. For the Lesser Horseshoe Bat, the population per roost is measured by the number, with a target of maintaining a minimum number of 100 bats for summer roosts and 128 bats for winter roosts. The proposed development is not expected to impact either the summer or winter roost populations, as the closest proposed turbine is approximately 9.2 km from the SAC, far beyond the species' critical foraging range of 2.5 km. Therefore, there is no potential for adverse effects on the SAC from the proposed development, no expected duration of effect in the absence of mitigation measures, and no potential effect in combination with other plans or projects. Additionally, the condition of the winter and summer roosts is not anticipated to decline as a result of the proposed project. The auxiliary roost at the derelict farm between turbines T6 and T8, along with its surrounding vegetation, will be retained. Despite the potential for limited disturbance from turbine noise, the intermittent use of the roost and its location on the extreme outer edge of the winter/summer migration range suggest that any such disturbances will not adversely affect the SAC.

10.3.102. The extent of potential foraging habitat, measured in hectares, is also a crucial consideration, with a target to avoid significant declines within 2.5 km of qualifying roosts. Since the closest turbine to the SAC is well outside this critical range, there is no anticipated loss of foraging habitat that would impact the SAC. Similarly, no loss of linear features such as hedgerows and treelines, which serve as commuting routes for the bats, is expected within this critical range.

10.3.103. The impact of light pollution on the Lesser Horseshoe Bat is a concern, given their sensitivity to artificial lighting. However, the proposed project does not include operational phase lighting other than aviation lighting on turbines, and no lighting from the project will be within 2.5 kilometers of the SAC. Therefore, there is no potential for

adverse effects from light pollution on the Lesser Horseshoe Bat population within the SAC.

10.3.104. In conclusion, I consider that the proposed wind farm development, when evaluated against the conservation objectives and targets for the Lesser Horseshoe Bat within the Dane's Hole, Pouolnalecka SAC, poses no significant risk to the species. The distance of the development from the SAC, combined with the mitigation measures in place, ensures that the integrity of the bat population and their habitat within the SAC will not be compromised. It is crucial, however, that the project adheres to the mitigation strategies proposed and engages in continuous monitoring to confirm that the Lesser Horseshoe Bat population remains unaffected throughout the project's lifecycle.

10.3.104.1. ***River Shannon and River Fergus Estuaries SPA***

10.3.105. The primary conservation objective for the Cormorant within the River Shannon and River Fergus Estuaries SPA is to maintain its favourable conservation condition. This involves ensuring the breeding population, represented by the number of apparently occupied nests (AONs), does not significantly decline. Moreover, productivity rates, defined by the mean number of offspring, must not suffer a significant reduction, and the distribution of breeding colonies must remain stable both in number and area coverage.

10.3.106. The breeding population abundance is measured by the number of apparently occupied nests (AONs), which serves as a direct indicator of the species' reproductive presence in the area. The productivity rate, which reflects the average number of offspring produced, is indicative of the species' successful reproduction and the subsequent juvenile survival rates, providing insights into the future sustainability of the Cormorant population. The distribution of breeding colonies is determined by counting the colonies, noting their specific locations, and measuring the area they cover in hectares. This distribution data helps in understanding the spatial dynamics of the species and ensures that the colonies have sufficient habitat for sustainable growth. The prey biomass available is a critical food resource attribute for the Cormorants, with measures including the weight of prey available in the ecosystem. This not only affects the current population but also has implications for future generations, making its continuous assessment vital. Barriers to connectivity are

measured by their number, location, shape, and the area they cover. These barriers can impede the movement and natural behaviours of the Cormorants, and their absence is crucial for maintaining a connected and healthy ecosystem. Disturbance at the breeding site is evaluated based on the level of impact from human activities. This measure helps to ensure that human presence does not adversely affect the Cormorant's breeding activities, which is essential for the species' continued prosperity. The targets set for these measures aim to prevent any significant decline in the AONs, productivity rate, and distribution of breeding colonies, ensuring that the long-term population trend remains stable or is on an upward trajectory. Additionally, efforts are made to ensure that there is no significant increase in barriers to connectivity and that human activities are managed so as not to negatively impact the Cormorant breeding population. These targets are essential to safeguard the Cormorants within the SPA, ensuring their conservation for future generations.

10.3.107. The potential pollution events are expected to be temporary with localised effects, thereby not reducing the number of AONs, nor affecting the productivity rate and distribution of breeding colonies. Hence, the site integrity for the Cormorant remains uncompromised. The duration of any adverse effects is expected to be short-lived and without significant long-term consequences. Thus, no mitigation measures are specified for the attributes where no potential adverse effects are identified.

10.3.108. While there is potential for unknown effects on prey biomass, which could temporarily reduce available food sources, the proposed project will not create a disturbance at the breeding sites. On a precautionary basis, potential for a decline in prey biomass exists, necessitating further assessment and potentially mitigation measures.

10.3.109. In consideration of the above, I conclude that the proposed wind farm development is unlikely to pose a significant threat to the conservation objectives for the Cormorant in the SPA, given the current evidence suggesting no direct impacts on breeding sites or significant disturbance to the population. However, given the potential for unknown effects on prey biomass, further detailed assessment is warranted to ensure that these potential impacts remain within acceptable limits and do not compromise the conservation targets. Mitigation measures may be required if subsequent assessments indicate a risk of significant decline in prey biomass, to

ensure the project remains compatible with the conservation objectives for the Cormorant in the SPA.

10.3.110. Regarding the SCI species such as Whooper Swan, Light-bellied Brent Goose, Shelduck, and several others, the Conservation Objective is to maintain the favourable conservation condition of the wintering SCI species, as well as the integrity of the wetland habitat. For the species, the attributes include population trends and distribution, measured through percentage changes, range, timing, and intensity of use of areas. For the wetland habitat, the measure is the permanent area in hectares. The targets for the species are to ensure a stable or increasing long-term population trend and no significant decrease in the range, timing, or intensity of use of areas, except for natural variations. The wetland habitat target is to maintain the current area of 32,261 hectares, with no significant reduction.

10.3.111. The assessment of the potential for adverse effects indicates that any potential pollution events from the wind farm development are expected to be temporary with localised effects. For species, these do not have the potential to cause significant changes in population trends or distribution. For the wetland habitat, the project will not reduce the permanent area occupied by the habitat. The duration of potential effects on the species' range, timing, and intensity of use of areas is considered to be temporary. However, it is noted that there is potential for a decrease due to a reduction in prey biomass, suggesting that mitigation measures may be required if further assessments indicate a risk.

10.3.112. There is no potential for the wind farm project to affect the conservation targets either alone or in combination with other plans or projects for most attributes. However, for the range, timing, and intensity of use of areas by the species, there is a potential for the project to affect these targets in combination with other projects, necessitating further evaluation.

10.3.113. I conclude, therefore, that the proposed wind farm development would have no significant impact on the long-term conservation objectives for the wintering SCI species and the wetland habitat in the SPA. Evidence indicates that there would be a negligible effect on population trends and the permanent area of the wetland habitat. However, the potential reduction in prey biomass and its impact on the species' distribution warrants further investigation and possible mitigation strategies.

10.3.113.1. ***Curraghchase Woods SAC***

10.3.114. The primary conservation objective for the Alluvial Forests and Taxus baccata woods is to restore and maintain their favourable conservation condition within the SAC. This involves ensuring the stability or increase in habitat area and occurrence, and the presence of diverse woodland structures and native species. Attributes such as habitat area and occurrence, woodland size, structure, and hydrological regime are measured in hectares, percentage cover, height, and meters of water table depth. Community diversity, natural regeneration, dead wood availability, and the presence of veteran trees and indicators of local distinctiveness are also considered. Targets include no reduction in habitat area or occurrence, maintaining woodland size and structure, ensuring an appropriate hydrological regime, and preserving a high percentage of native tree cover. The presence of a variety of native species is encouraged, while negative indicator species, particularly invasive ones, should be absent or controlled.

10.3.115. The proposed development is not expected to reduce the habitat area, occurrence, woodland size, or alter the woodland structure, and it will not affect the hydrological regime required for alluvial forests. However, there is a concern regarding the potential spread of invasive species from traffic during construction (Turbine Delivery Route) works, which could spread to accommodation works near the SAC and then to the SAC itself. This spread could negatively impact community diversity, natural regeneration, and vegetation composition if not managed properly.

10.3.116. While some attributes are not anticipated to be affected, the potential long-term effects of invasive species spread require mitigation strategies to control their introduction and spread. These strategies should ensure that the invasive species are managed effectively to prevent them from affecting the SAC's habitats.

10.3.117. There is a potential risk that the project, in combination with other plans or projects, could exacerbate the spread of invasive species. This calls for a coordinated approach to managing such risks across different projects and plans.

10.3.118. I conclude, therefore, that the proposed wind farm development is unlikely to directly impact the conservation objectives for the habitat area, occurrence, woodland size, structure, hydrological regime, dead wood availability, veteran trees, and indicators of local distinctiveness. However, the potential indirect effect of invasive

species spread due to development activities could pose a significant risk to the community diversity, natural regeneration, and vegetation composition of the SAC. This risk must be mitigated through stringent management and control measures to ensure the continued favourable conservation condition of the alluvial forests and Taxus baccata woods within Curraghchase Woods SAC. Continued monitoring and adaptive management, coupled with best practices for invasive species control, will be critical to support the long-term conservation of these habitats.

10.3.118.1. ***Mitigation Measures Proposed***

10.3.119. Section 4.6 of the NIS sets out proposed mitigation measures to reduce impacts on designated sites, flora and fauna through avoidance and design, and during the construction, operational and decommissioning phases of the proposed development. These are summarised below.

Mitigation by Avoidance and Design

- The wind farm's hard-standing area has been minimised to reduce habitat and flora land take.
- An existing track is utilised for access through long-established woodland, minimizing tree felling and habitat fragmentation.
- Design and layout of the site avoid direct effects on designated sites.
- The grid connection route is chosen to minimise the impact on sensitive habitats, following existing tracks and roads.
- Buffers of 50 meters are maintained from natural watercourses, except at crossing points, to protect hydrological features.
- Clear-span bridge design is selected for new stream crossings within the site to avoid instream works and minimize disturbance.
- Precast concrete culverts are used to prevent concrete contamination and are installed following NRA guidelines.
- Sustainable Urban Drainage Systems (SuDS) are included in the design to maintain the site's existing hydrology and reduce sediment release risk during the operational stage.

Prior to Construction

- The Construction and Environmental Management Plan (CEMP) will be strictly followed to minimise environmental impacts during construction, operation, and decommissioning of the wind farm.
- The contractor is required to adhere to the CEMP without alterations, ensuring high success in mitigating environmental impacts.
- The Project Manager, Environmental Manager, and a Qualified Ecologist will monitor the effectiveness of the CEMP.
- A Project Ecologist or Ecological Clerk of Works (ECoW) will oversee the implementation of biodiversity management measures.
- The ECoW will have the authority to halt construction activities if there's a risk of ecological harm.
- Communication with Inland Fisheries Ireland (IFI) will be established by the ECoW to ensure transparency and stakeholder engagement regarding mitigation measures.
- Baseline water quality will be established pre-construction to monitor changes and protect aquatic habitats.
- Bi-weekly monitoring during construction and annual assessments during operation will be conducted to ensure water quality is maintained.
- Invasive species will be managed as per the Invasive Species Management Plan (ISMP), with site hygiene measures in place to prevent their spread.
- The ISMP will be updated throughout the project lifecycle to ensure containment, treatment, and eradication of invasive species.
- An Environmental Manager will be appointed to manage water control measures effectively.
- The Environmental Manager will also have the authority to halt construction activities to prevent water management issues.
- Silt traps and silt fencing will be employed to control sediment runoff and protect watercourses.

- These measures will be maintained regularly, with additional fencing available for emergencies.
- Settlement ponds will be constructed to treat runoff and prevent sediment from entering waterways, protecting the watercourse network.

10.3.120. These measures are designed to mitigate the potential adverse environmental effects of the wind farm development, ensuring a high probability of successful implementation and minimal impact on the integrity of sensitive habitats and species. Regular reporting and monitoring by competent authorities will ensure the measures are effective throughout the project's lifecycle.

Construction Phase Mitigation Measures

- Minimise the area of work to reduce habitat and flora disturbance, using existing roads and minimizing excavation.
- Construction activities will be confined within the development footprint, with designated access points to minimise biodiversity disruption.
- A Project Ecologist/Ecological Clerk of Works (ECoW) will oversee and ensure full implementation of all mitigation measures.
- Construction operations will occur during daylight to limit disturbances to nocturnal species; necessary night operations will follow best practice guidelines.
- Daily toolbox talks will inform construction staff about minimizing disturbance to key species.
- Regular maintenance checks on machinery will be conducted to prevent contamination on-site, with major repairs done off-site.
- Pollution incident response training will be given to all personnel, with an emergency response plan in place for quick action.
- A 50m self-imposed buffer zone around watercourses, except for road upgrades and crossings, will be maintained to protect aquatic zones.
- The site drainage system is designed to work with existing flows, incorporating a three-stage treatment train to manage runoff from hard surfaces.
- Settlement ponds will be managed and cleared regularly to prevent sediment runoff, and silt fences will be used at watercourse crossings.

- An Emergency Erosion and Silt Control Response Plan will act as a contingency for surface water management.
- Visual inspections and maintenance of drainage systems will be conducted regularly to ensure no pollutants enter waterways, with immediate remediation if needed.
- For piped drain crossings, clean round gravel will be used as bedding to protect fisheries as per Inland Fisheries Ireland guidelines.
- Tree felling practices will adhere to multiple forestry and environmental guidelines to reduce sediment and nutrient runoff, with the implementation overseen by the Environmental Manager and ECoW.
- A 15-20m buffer zone will be established around aquatic zones during tree felling, complemented by silt fences in drainage channels.
- Timber extraction will be halted if damage or rutting occurs to prevent surface water conduits from forming, thereby protecting surrounding watercourses.
- Tree felling in spring will allow for sowing native grass seeds post-harvest for sediment filtration, with operations monitored by the Environmental Manager and ECoW.
- Machine operations will be scheduled around weather forecasts to avoid heavy rainfall periods, reducing the risk of erosion and sediment runoff.
- Removal of felling debris will be conducted to reduce nutrient seepage, using brash mats to protect soil and prevent erosion.
- Construction of access tracks and temporary load-bearing surfaces will use clean stone to minimize suspended solid release, with site drainage like silt traps and settlement ponds installed in advance or parallel to construction.
- Site drainage for the new water crossings will involve a clear span bridge and box culverts, with instream works limited to July-September and under IFI agreement, ensuring sediment controls and water diversion are in place.
- Seasonal restrictions and silt control measures will be applied during the construction of the clear span bridge, with precast concrete components to minimize in-stream works.

- Silt Protection Controls (SPCs) will be established at drain crossings, consisting of silt traps with filter stone and material, to prevent sediment from entering watercourses.
- Construction during low flow conditions and within a specified weather window will ensure minimal impact on streams.
- Drainage around hard-standing areas will be shallow to lessen sub-soil disturbance, with permanent roadside drainage implemented during construction to manage runoff.
- Site drainage systems, including silt traps and stilling ponds, will be set up in advance of excavation work, with stilling ponds draining diffusely overland and to be back-filled post-construction.
- Access tracks will follow existing paths to minimize disruption, and roadside drains will be fitted with check dams if slopes exceed 2%.
- Only necessary clearance of obstructions will be conducted to maintain sediment arrest and flow attenuation functions provided by vegetation.
- Wheel wash facilities at site exits will prevent public road fouling, with self-contained units to facilitate waste removal to licensed facilities.
- Concrete pours and major works will be scheduled to avoid heavy rainfall, with a review of forecasts 24 hours in advance.
- Concrete washout areas will be designated, equipped with settlement lagoons to contain runoff.
- Hydrocarbon management involves bunded storage areas for fuels and oils, careful handling to prevent spillages, and immediate containment and removal of any spills.
- Refuelling will occur at a primary station, equipped with spill response measures, and mobile refuelling will maintain a distance from watercourses.
- Spill control training for all staff and spill kits will be available on-site to address accidental spillages immediately.
- Sanitary waste from portaloos or containerized toilets will be handled by licensed contractors.

- Duct installation in drains will only occur during dry periods, with environmental manager supervision to ensure no in-stream works.
- Standing water from excavations will be pumped into the site drainage system or removed by tanker if necessary to prevent sediment pollution.
- Cross-drains will be suitably sized to prevent clogging at drainage crossings, following contractual implementation and monitoring by the Environmental Manager.
- Settlement ponds, designed to accommodate 1 in 100-year storm events, will mitigate flooding risks, with no personnel on-site during extreme flood events.
- Excavated material will be reused on-site or stored at least 100m from watercourses, with spoil heaps covered and compacted to minimise runoff.
- Contaminated materials will be managed according to statutory waste handling requirements and disposed of following Waste Acceptance Criteria testing.
- Traffic management will adhere to the CEMP, with monitoring to ensure compliance.
- Horizontal Directional Drilling (HDD) control measures include double bunded PVC bunds to contain fluid spills and monitoring by the ECoW.

Operational Phase Mitigation Measures

- For operational phase mitigation, quarterly inspections will ensure the effectiveness of erosion and sediment control measures.
- Management of hydrocarbons will involve bunded storage areas for transformers and oil tanks to prevent groundwater contamination.
- Invasive species will be managed continuously as per the management plan, which will be updated throughout the project's lifecycle.
- Turbine lighting will be fitted with baffles to direct light skywards and will be subject to IAA approval, with monitoring included in the Fatality monitoring program.
- Vegetation-free buffer zones around turbines will be maintained mechanically without chemicals.
- Wastewater management will use sealed storage tanks with automated alarms for when emptying is required, and waste will be transported by authorized collectors.

Decommissioning Phase Mitigation Measures

- All prior to and construction phase mitigation measures, will be implemented during the decommissioning phase.

10.4. Tables 2 to 5 below summarise the appropriate assessment and site integrity test. The conservation objectives, targets and attributes as relevant to the identified potential adverse effects have been examined and assessed in relation to all aspects of the project (alone and in combination with other plans and projects). Mitigation measures proposed to avoid and reduce impacts to a non-significant level have been assessed. I am satisfied that the implementation of the suite of mitigation measures outlined above will ensure that no adverse effects on the conservation objectives of the Lower River Shannon SAC (002165) River Shannon and River Fergus Estuaries SPA (004077), Danes Hole, Poulnalecka SAC (000030), Curraghchase Woods SAC (000174) will arise during the construction, operational and decommissioning stages of the proposed development.

10.4.1.1. ***In-combination effects with plans, projects and activities***

10.5. In terms of possible in-combination effects, plans, programmes and existing and proposed developments were considered including the Clare, Limerick, and Tipperary County Development Plans, other existing and permitted windfarms, solar energy development, housing and other large-scale development and ongoing land management practices. This complete assessment allows for clear, precise and definitive conclusions to be reached in terms of adverse effects on the integrity of European sites. I do not consider that there are any specific in-combination effects that arise from other plans or projects. The NIS considered the combined impacts of the overall development proposal on the site. I consider that any potential for in-combination effects on water quality in the River Shannon SAC (002165), Danes Hole, Poulnalecka SAC (000030), Curraghchase Woods SAC (000174) and potential for collision risk/disturbance and displacement of SCIs of River Shannon and River Fergus Estuaries SPA (004077) is negligible. Furthermore, other projects within the area which can influence water quality via rivers and other surface water features are also subject to AA. In terms of forestry development which arises within the area or

proposed replanting resulting from the proposal, I would note that forestry management is subject to a separate licencing regime which, itself, addresses matters including water quality.

10.6. Having regard to the above, I am satisfied that no cumulative / in combination effects on European Sites are likely to arise.

Table 2: River Shannon SAC (002165)

Table 2
River Shannon SAC (002165)
Summary of Key issues that could give rise to adverse effects (from screening)

- **Habitat loss due to construction and felling**
- **Deterioration of water quality from runoff**
- **Permanent habitat loss from infrastructure like culverts and bridges**
- **Disruption to aquatic species and habitats from silt and pollutants**
- **Spread of invasive species**
- **Potential crayfish plague introduction**
- **Dust emissions affecting watercourses**
- **Construction noise disturbing wildlife**
- **Chemical changes in water harming aquatic life**
- **Waste emissions altering watercourse conditions**
- **Cumulative effects from concurrent regional activities**
- **Resource extraction with minimal SAC impact**
- **Traffic and road construction unlikely to significantly affect SAC**
- **Localised operational impacts on water quality**

Conservation Objectives: Lower River Shannon SAC | National Parks & Wildlife Service (npws.ie)

		Summary of Appropriate Assessment			
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
Sea Lamprey *Petromyzon marinus*	Conservation Objectives Restore favourable conservation condition Targets and Attributes >75% river accessibility; 3 age/size groups; juvenile	Pollution impacts on juveniles; sedimentation affecting juvenile habitat; spawning bed alteration	Precast concrete culverts to prevent concrete contamination and maintain river accessibility.	No likely significant in-combination effects.	Yes

	density ≥1/m²; no decline in spawning bed extent		Sustainable Urban Drainage Systems (SuDS) to prevent sedimentation affecting juvenile habitat and spawning bed extent. Construction and Environmental Management Plan (CEMP) adherence to minimise pollution impacts on juveniles. Bi-weekly water quality monitoring during construction to detect and mitigate potential pollution events. Invasive Species Management Plan (ISMP) to control invasive species that could alter habitat conditions. Silt traps and fencing to prevent sediment runoff into		

			watercourses, protecting juvenile density and spawning beds. Clear-span bridge design for new stream crossings to avoid instream works, preserving the spawning bed extent. Designated construction areas to minimise habitat disruption and ensure >75% river accessibility is maintained. Seasonal restrictions on instream works (July-September) under IFI agreement to protect spawning beds during critical periods. Sediment control measures at drain crossings (Silt Protection Controls)		

			to maintain water quality and prevent spawning bed alteration.		
Brook Lamprey *Lampetra planeri* & River Lamprey *Lampetra fluviatilis*	Conservation Objective: Maintain favourable conservation condition Target: Access to all watercourses; 3 age/size groups; juvenile density ≥2/m²; no decline in spawning bed extent	Pollution impacts on juveniles; sedimentation affecting juvenile habitat; spawning bed alteration	Use of precast concrete culverts to prevent contamination and maintain unimpeded access to watercourses. Implementation of Sustainable Urban Drainage Systems (SuDS) to manage sediment and reduce the risk of sedimentation affecting juvenile habitats and spawning bed extent. Strict adherence to the Construction and Environmental Management Plan (CEMP) to minimise environmental impacts and pollution risks to juveniles.	No likely significant in-combination effects.	Yes

			Regular water quality monitoring during construction and operation to swiftly address any pollution events that could impact juveniles. Invasive Species Management Plan (ISMP) to prevent habitat alterations that could affect juvenile density and spawning bed distribution. Installation of silt traps and silt fencing around watercourses to control sediment runoff, protecting habitat quality for juveniles and spawning beds. Clear-span bridges for stream crossings to avoid instream works that could		

			disrupt spawning bed integrity. Designated access points and minimised work areas to ensure access to all watercourses is maintained for the lamprey species. Seasonal timing of instream works, preferably in periods of low lamprey activity, to minimise disruption to spawning beds and juvenile habitats. Silt Protection Controls (SPCs) at drain crossings to maintain water quality and prevent spawning bed alteration due to sedimentation.		
Atlantic Salmon *Salmo salar* (Freshwater Only)	Conservation Objective: Restore favourable conservation condition	Water quality reduction impacting spawning habitat; sedimentation affecting redds	Precast culverts installation following NRA guidelines to ensure 100% river channel access.	No likely significant in-combination effects.	Yes

	Target: 100% river channel access; Conservation Limit (CL) exceeded; maintain salmon fry abundance; no smolt decline; no redd decline; water quality ≥ EPA Q4		Strict adherence to CEMP to prevent water quality reduction from construction activities. Monitoring of water quality pre-construction and bi-weekly during construction to maintain EPA Q4 standards. Silt traps and fencing to prevent sedimentation from affecting redds and salmon fry abundance. Clear-span bridge design to avoid instream works and protect spawning habitat. ISMP adherence to manage invasive species, protecting habitat quality for salmon. Restricted construction periods during critical salmon life stages to		

			prevent smolt and redd decline. SPCs at watercourse crossings to maintain sediment and hydrocarbon control, ensuring water quality. Vegetation buffers around watercourses to naturally filter potential pollutants and sediments. Proactive sediment runoff management through settlement ponds to safeguard redd areas.		
Otter *Lutra lutra*	Conservation Objective: Restore favourable conservation condition Target: No decline in distribution, terrestrial/marine habitat extent, and riparian habitat; maintain fish biomass; no new barriers	Disruption from construction; invasive species spread impacting habitat	Minimised habitat disruption by using existing tracks and limiting new construction areas. Installation of clear-span bridges to avoid creating new barriers and to maintain habitat connectivity.	No likely significant in-combination effects.	Yes

			Regular monitoring and management of invasive species as per the ISMP to protect riparian habitats. Ensuring construction buffers of 50 meters from watercourses to preserve fish biomass and prevent disturbance. ECoW oversight during construction to promptly address and mitigate any ecological harm. Silt traps and settlement ponds maintenance to prevent water pollution and protect otter feeding grounds. Bi-weekly water quality monitoring to detect and mitigate any changes that		

			could affect otter prey availability. CEMP implementation to control sediment runoff and preserve the integrity of terrestrial and marine habitats. Environmental Manager's authority to halt activities to prevent water management issues, safeguarding otter habitats.		
Water courses with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Conservation Objective: Maintain favourable conservation condition Target: Stable/increasing habitat area; no decline in distribution; maintain hydrological regimes; appropriate substratum composition	Substratum composition alteration from sediment; nutrient/water quality changes; invasive species spread	Use existing tracks to minimise habitat disruption. Clear-span bridges to maintain habitat connectivity. Regular invasive species management per ISMP. 50m construction buffers from watercourses.	No likely significant in-combination effects.	Yes

			ECoW monitors and addresses ecological harm. Maintain silt traps and ponds to protect water quality. Bi-weekly water quality monitoring. Implement CEMP to control sediment runoff. Environmental Manager can halt activities for water protection.		
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*	Conservation Objective: Restore favourable conservation condition Target: Stable/increasing area and distribution; diverse woodland structure; maintain hydrological regime; no decline in native tree cover, typical species, and veteran trees; control non-native species	Invasive species spread impacting community diversity and natural regeneration	Minimise habitat land take to maintain forest area. Use existing woodland paths to prevent habitat fragmentation. Implement design measures to protect existing hydrology.	No likely significant in-combination effects.	Yes

			Manage invasive species according to the ISMP. Regular maintenance of silt traps to protect water regime. Construction and Environmental Management Plan adherence. Ecological Clerk of Works to oversee biodiversity protection. Environmental Manager to oversee water control measures. Silt fencing and settlement ponds to prevent sediment intrusion.		
Overall conclusion: Integrity test Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of this European site, and no reasonable doubt remains as to the absence of such effects.					

Table 3: Danes Hole, Poulnalecka SAC (000030)

Table 3
Danes Hole, Poulnalecka SAC (000030)
Summary of Key issues that could give rise to adverse effects (from screening)

- **Permanent removal of wooded habitats affecting lesser horseshoe bat foraging**
- **Wind farm operation risks bat collisions and displacement**
- **Loss of linear features like hedgerows may act as barriers**
- **Low collision risk for lesser horseshoe bats due to their behaviour**
- **Noise from human activity could disturb roosting or foraging bats**
- **Light emissions potentially disturbing bats but mitigated by no night-time working**
- **Project duration could displace bats and sever habitats**
- **No significant combined effects from collision risks with other projects**

Conservation Objectives: Danes Hole, Poulnalecka SAC | National Parks & Wildlife Service (npws.ie)

		Summary of Appropriate Assessment			
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
Lesser Horseshoe Bat (Rhinolophus hipposideros)	Conservation Objective: Restore favourable conservation condition Target: Summer roost minimum: 100 bats Winter roost minimum: 128 bats No decline in condition for summer and winter roosts No decline in auxiliary roosts number and condition	Disturbance from turbine noise at auxiliary roosts. Disturbance from limited construction phase lighting. Loss of foraging habitat due to site development.	Strict compliance with the Construction and Environmental Management Plan (CEMP) to minimise noise and light disturbance near roosts. Utilisation of existing tracks to prevent	No likely significant in-combination effects.	Yes

	No significant decline in foraging habitat within 2.5 km of qualifying roosts No significant loss of linear features within 2.5 km of qualifying roosts No significant increase in artificial light intensity near roosts or commuting routes within 2.5 km		loss of foraging habitat. Designated construction phase lighting management to avoid roost disturbance. Scheduling major construction works to daylight hours to limit impact on nocturnal activities. Buffer zones established to preserve foraging habitats and linear features. Continuous monitoring of bat activity and habitat conditions by an Ecological Clerk of Works (ECoW). Implementation of lighting guidelines to minimise artificial light impact, fitted with baffles to direct		

			light away from sensitive areas. Habitat management to ensure no significant change in foraging areas. Turbine operation protocols to minimize noise disturbance at auxiliary roosts.		
Overall conclusion: Integrity test Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of this European site, and no reasonable doubt remains as to the absence of such effects.					

Table 4: Curraghchase Woods SAC (000174)

Table 4
Curraghchase Woods SAC
Summary of Key issues that could give rise to adverse effects (from screening)

- **Invasive species spread via machinery**
- **No other significant impacts identified**

Conservation Objectives: Curraghchase Woods SAC | National Parks & Wildlife Service (npws.ie)

		Summary of Appropriate Assessment			
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
Alluvial Forests (Alnus glutinosa and Fraxinus excelsior)	Conservation Objective: Restore favourable conservation condition Target: Area stable/increasing; ≥8.5ha; no decline in distribution; no decline in woodland size; diverse structure; maintain community diversity	Potential spread of invasive species from TDR works	Implementation of the Invasive Species Management Plan (ISMP) to control and eradicate invasive species. Utilisation of existing tracks and minimal new construction to preserve woodland size and distribution. Environmental Manager oversight to ensure maintenance of diverse woodland structure.	No likely significant in-combination effects.	Yes

			Regular monitoring for invasive species and quick response actions near alluvial forests. Ecological Clerk of Works (ECoW) to oversee biodiversity management. Strict adherence to the Construction and Environmental Management Plan (CEMP) to avoid habitat disruption. Pre-construction surveys to identify and protect alluvial forest areas from potential spread of invasive species. Habitat management practices to ensure no decline in native tree cover and typical species. Maintaining and increasing woodland		

			area through controlled access and minimizing land take.		
Taxus baccata Woods	Conservation Objective: Restore favourable conservation condition Target: Area stable/increasing; no decline in distribution; diverse structure; no decline in native tree cover; typical native species present	Potential spread of invasive species from TDR works affecting negative indicator species control	Minimise wind farm hard-standing area to reduce habitat and flora land take, preserving native tree cover. Utilise existing tracks for access, minimizing tree felling and habitat fragmentation in Taxus baccata woods. Design and layout of the site to avoid direct effects on Taxus baccata habitat. Maintain 50-meter buffers from natural watercourses to protect hydrological features, supporting diverse structure in Taxus baccata woods.	No likely significant in-combination effects.	Yes

			Use clear-span bridge design and precast concrete culverts for stream crossings to minimise disturbance and preserve hydrology. Implement Sustainable Urban Drainage Systems (SuDS) in design to maintain existing hydrology, aiding diverse structure in woods. Strictly adhere to Construction and Environmental Management Plan (CEMP) to minimise environmental impacts during all phases. Appoint Project Ecologist/Ecological Clerk of Works (ECoW) for biodiversity management,		

			ensuring habitat preservation. Manage invasive species as per Invasive Species Management Plan (ISMP), preventing spread to Taxus baccata woods. Regular bi-weekly and annual water quality monitoring to protect aquatic habitats, supporting typical native species in woods. Use silt traps and fencing to control sediment runoff, protecting watercourses and maintaining habitat quality. Construct settlement ponds for runoff treatment, preventing sediment entry into waterways, crucial		

			for wood's hydrology. Minimise work area during construction, reducing habitat and flora disturbance. Conduct construction activities within the development footprint, minimising biodiversity disruption in woods. Implement tree felling practices adhering to forestry guidelines, reducing sediment runoff and preserving native tree cover. Establish buffer zones around aquatic zones during tree felling, complemented by silt fences, protecting wood's structure. Schedule machine operations around weather forecasts to reduce erosion risk, maintaining woods'		

			hydrology and soil quality. Use clean stone for access tracks and temporary surfaces, minimising suspended solid release and preserving woods' hydrology. Implement site drainage systems like silt traps and stilling ponds before excavation, protecting wood's hydrological regime. Regular visual inspections and maintenance of drainage systems to ensure pollutant-free waterways, supporting typical native species. Horizontal Directional Drilling (HDD) control measures to prevent fluid spills, protecting the wood's environment. Quarterly inspections during		

			operational phase to ensure effectiveness of erosion and sediment control measures. Continuous management of invasive species as per the updated management plan, ensuring control of negative indicator species. Mechanical maintenance of vegetation-free buffer zones around turbines without chemicals, preserving native species in woods.		
Overall conclusion: Integrity test Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of this European site, and no reasonable doubt remains as to the absence of such effects.					

Table 5: River Shannon and River Fergus Estuaries SPA (004077)

Table 2
River Shannon and River Fergus Estuaries SPA (004077)
Summary of Key issues that could give rise to adverse effects (from screening)

- **Habitat loss and alteration from construction**
- **Temporary vegetation disturbance from grid connection works**
- **Construction emissions**
- **Noise from human and turbine activities**
- **Sedimentation and water quality changes during construction**
- **Potential in-combination water quality effects**

Conservation Objectives: River Shannon and River Fergus Estuaries SPA | National Parks & Wildlife Service (npws.ie)

		Summary of Appropriate Assessment			
Qualifying Interest feature	**Conservation Objectives Targets and attributes**	**Potential adverse effects**	**Mitigation measures**	**In-combination effects**	**Can adverse effects on integrity be excluded?**
Cormorant (Phalacrocorax carbo)	Conservation Objectives Maintain favourable conservation condition Targets and Attributes No significant decline in AONs, productivity, distribution, or prey biomass	Temporary localised pollution effects; precautionary potential for significant decline in prey biomass	Strict adherence to the Construction and Environmental Management Plan (CEMP) to minimise pollution effects. Regular water quality monitoring to ensure no decline in prey biomass. Invasive species control as per the Invasive Species Management Plan (ISMP),	No likely significant in-combination effects.	Yes

			safeguarding prey habitat. 50-meter buffer zones around watercourses to protect aquatic prey habitats. Clear-span bridge design and sediment control measures (silt traps, fencing) to maintain water quality for prey. Settlement ponds for runoff treatment to preserve prey habitat quality. Daylight-only construction operations to limit disturbances to Cormorants and their prey. Machinery maintenance checks and pollution incident response training to prevent		

			habitat contamination. Hydrocarbon management with bunded storage areas and spill response measures to protect water quality. Quarterly inspections during operational phase to ensure effective erosion and sediment control, maintaining prey habitat. Further details - refer to Section 10.3.119 above		
Whooper Swan (Cygnus cygnus), Light-bellied Brent Goose (Branta bernicla hrota), Shelduck (Tadorna tadorna),	<u>Conservation Objectives</u> Maintain favourable conservation condition of wintering SCI species <u>Targets and Attributes</u> No significant decline in population trend, distribution,	Temporary localised pollution effects; precautionary potential for a decrease in range, timing, and intensity of area use by SCI species due to reduction in prey biomass	Full implementation of the Construction and Environmental Management Plan (CEMP) to reduce temporary pollution. Continuous water quality monitoring to	No likely significant in-combination effects.	Yes

Wigeon (Anas penelope), Teal (Anas crecca), Pintail (Anas acuta), Shoveler (Anas clypeata), Scaup (Aythya marila), Ringed Plover (Charadrius hiaticula), Golden Plover (Pluvialis apricaria), Grey Plover (Pluvialis squatarola), Lapwing (Vanellus vanellus), Knot (Calidris canutus), Dunlin (Calidris alpina), Black-tailed Godwit (Limosa limosa), Bar-tailed Godwit (Limosa lapponica), Curlew (Numenius arquata), Redshank (Tringa	range, timing, and intensity of area use		prevent reduction in prey biomass. Invasive species management according to the Invasive Species Management Plan (ISMP), protecting food sources. Establishing and maintaining 50-meter buffer zones around watercourses, preserving habitats and food sources. Use of clear-span bridges and sediment control (silt traps, fencing) to maintain water quality in feeding areas. Construction of settlement ponds for treating runoff, ensuring habitat and food source quality. Limiting construction activities to daylight		

tetanus), Greenshank (Tringa nebularia), Black-headed Gull (Chroicocephalus ridibundus)			hours to minimise disturbances to bird feeding and resting patterns. Regular machinery maintenance and pollution incident training to prevent habitat contamination. Hydrocarbon management with bunded storage areas and emergency spill response measures to protect water habitats. Regular inspections during the operational phase to ensure the effectiveness of erosion and sediment control measures in preserving habitats.		
Wetlands	Conservation Objectives Maintain favourable conservation condition Targets and Attributes	No potential for adverse effects from the project on wetland habitat area	Implement the Construction and Environmental Management Plan	No likely significant in-combination effects.	Yes

	Stable wetland habitat area, not significantly less than 32,261ha		(CEMP) to avoid adverse effects on wetlands. Regular water quality monitoring to protect wetland habitats. Invasive species management as per the Invasive Species Management Plan (ISMP), preserving wetland ecosystems. Maintain 50-meter buffers around natural watercourses to protect wetland hydrology. Utilise clear-span bridges and precast concrete culverts to minimise disturbance in wetland areas. Control sediment runoff using silt traps and fencing, safeguarding		

			wetland water quality. Settlement ponds for runoff treatment to prevent sediment intrusion into wetlands. Design site drainage to maintain existing wetland hydrology. Conduct construction activities within designated areas to minimize habitat disruption. Regular inspections to ensure effective erosion and sediment control in wetland areas. Hydrocarbon management with bunded storage areas and spill response measures to prevent contamination of wetlands.		
Overall conclusion: Integrity test Following the implementation of mitigation, the construction and operation of this proposed development will not adversely affect the integrity of this European site, and no reasonable doubt remains as to the absence of such effects.					

10.7.1. **Appropriate Assessment Conclusions**

10.7.2. The proposed development has been assessed in light of the requirements of Sections 177U and 177V of the Planning and Development Act 2000 (as amended). Having carried out screening for Appropriate Assessment of the project, it was concluded that it may have a significant effect on the following European Sites:

- Lower River Shannon SAC (002165)
- River Shannon and River Fergus Estuaries SPA (004077)
- Danes Hole, Poulnalecka SAC (000030)
- Curraghchase Woods SAC (000174)

10.7.3. Consequently, an Appropriate Assessment was required of the implications of the project on the qualifying interests/special conservation interests of those sites in light of their conservation objectives. I am satisfied that an examination of the potential impacts has been analysed and evaluated using the best scientific knowledge. Where potential significant effects on Natura 2000 sites have been identified, key design features and mitigation measures have been prescribed to remove risks to the integrity of the European sites. I am satisfied based on the information available, which I consider to be adequate in order to carry out a Stage 2 Appropriate Assessment, that if the key design features and mitigation measures are undertaken, maintained and monitored as detailed in the NIS, adverse effects on the integrity of Natura 2000 sites will be avoided.

10.7.4. Therefore, following an Appropriate Assessment, it has been ascertained that the proposed development, individually or in combination with other plans or projects, would not adversely affect the integrity of the River Shannon SAC (002165), Danes Hole, Poulnalecka SAC (000030), Curraghchase Woods SAC (000174) and the River Shannon and River Fergus Estuaries SPA (004077) or any other European site, in view of the sites' Conservation Objectives. This conclusion is based on a complete assessment of all aspects of the proposed project, and there is no reasonable doubt as to the absence of adverse effects.

11.0 **Recommendation**

11.1. I recommend that permission is granted subject to the following conditions-

12.0 **Reasons and Considerations**

12.1.1. Having regard to;

(i) the policies and objectives set out in the Clare County Development Plan 2023-2029, Limerick Development Plan 2022-2028 and the Tipperary County Development Plan 2022-2028

(ii) the Southern Regional Spatial and Economic Strategy

(iii) the provisions of the Climate Action Plan 2023 (Government of Ireland), with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases,

(iv) 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

(v) the provisions of the Draft Revised Wind Energy Development Guidelines (2019), prepared by the Department of Housing, Planning and Local Government

(vi) relevant European and National Policy and guidelines

(vii) the nature, scale, design and location of the proposed development,

(viii) the planning history of the site and the surrounding area,

(ix) the pattern of existing and permitted development in the area,

(x) the distance to dwellings and other sensitive receptors from the proposed development,

(xi) the Environmental Impact Assessment Report submitted,

(xii) the Natura Impact Statement submitted,

(xiii) the submissions and observations received, and

(xiv) the likely consequences for the environment and the proper planning and sustainable development of the area in which it is proposed to carry out the proposed development, and the likely significant effects of the proposed development on European Sites (including transboundary sites), and

it is considered that, subject to compliance with the conditions set out below, the proposed development would be acceptable at this location. The proposal would be acceptable in terms of impact on the visual amenities and landscape character of the area, not seriously injure the amenities of property in the vicinity, would be acceptable in terms of pedestrian and traffic safety, would not be prejudicial to public health and be in accordance with the proper planning and sustainable development of the area. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

13.0 **Conditions**

1.	The development shall be carried out and completed in accordance with the plans and particulars lodged with the 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 commencement of development and the development shall be carried out and completed in accordance with the agreed particulars. **Reason:** In the interest of clarity.
2.	The period during which the development hereby permitted is constructed shall be 10 years from the date of this order. **Reason:** In the interests of clarity.
3.	This permission shall be for a period of 35 years from the date of the first commissioning of the wind farm. **Reason:** To enable the planning authority to review its operation in the light of the circumstances then prevailing.

4.	The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Statement and associated documentation are implemented in full, save as may be required by conditions set out below. **Reason:** In the interest of protection of the environment.
5.	Wind turbine noise arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in the vicinity, shall not exceed the greater of: (a) 5 dB(A) above background noise levels or (b) 43 dB(A) L90,10min when measured externally at dwellings or other sensitive receptors. Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring programme for the subject development, including any mitigation measures such as the de-rating of particular turbines. All noise measurements shall be carried out in accordance with ISO Recommendation R 1996 “Assessment of Noise with Respect to Community Response,” as amended by ISO Recommendations R 1996-1. The results of the initial noise compliance monitoring shall be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm. **Reason:** In the interest of residential amenity.
6.	a) Shadow flicker arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in the vicinity, shall not exceed 30 hours per year or 30 minutes per day at existing or permitted dwellings or other sensitive receptors. b) The proposed development shall be fitted with appropriate equipment and software to control shadow flicker in accordance with the above requirement. Details of these control measures shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

	c) A report shall be prepared by a suitable qualified person in accordance with the requirements of the planning authority, indicating compliance with the above shadow clicker requirements at dwellings. Within 12 months of commissioning of the proposed wind farm, this report shall be submitted to, and agreed in writing with, the planning authority. The developer shall outline proposed measures to address any recorded non-compliances, including control of turbine rotation if necessary. A similar report may be requested at reasonable intervals thereafter by the planning authority. **Reason:** In the interest of residential amenity.
7.	Prior to the commencement of development, the applicant shall submit for the written agreement of the planning authority, details of an obstacle warning light scheme which can be visible to night vision equipment. **Reason:** in the interest of aviation safety.
8.	The construction of the development shall be managed in accordance with a Construction and Environmental Management Plan, which shall be submitted to, and agreed in writing with the planning authority prior to commencement of development. This plan shall provide details of intended construction practice for the development, including hours of working, noise management measures and off-site disposal of construction/demolition waste. Reason: In the interests of public safety and residential amenity.
9.	Water supply, wastewater treatment and surface water attenuation and disposal shall comply with the requirements of the planning authority for such works and services. **Reason:** In the interest of public health
10.	The following design requirements shall be complied with: a) The wind turbines shall be designed with a hub height ranging from 102.5 to 110 metres, a rotor diameter from 131 to 138 metres, and blades that result in an overall tip height from 169 to 176.5 metres.

	b) The wind turbines including masts and blades, and the wind monitoring mast, shall be finished externally in a light grey colour. c) Cables within the site shall be laid underground. d) The wind turbines shall be geared to ensure that the blades rotate in the same direction. e) The meteorological mast shall be no more than 100 metres high. f) No advertising material shall be placed on or otherwise be affixed to any structure on the site without a prior grant of planning permission. **Reason:** In the interest of visual amenity.
11.	The delivery of large-scale turbine components for the construction of the windfarm shall be managed in accordance with a Traffic Management Plan, which shall be submitted to, and agreed in writing with the planning authority prior to commencement of development. This plan shall provide details shall of the road network to be used by construction traffic, including over-sized loads, and detailed arrangements for the protection of bridges, culverts or other structures to be traversed, as may be required. The plan should also contain details of how the developer intends to engage with and notify the local community in advance of the delivery of oversized loads. **Reason:** In the interests of public safety and residential amenity.
12.	On full or partial decommissioning of the turbines or if the turbines cease operation for a period of more than one year, the mast and the turbine concerned shall be removed and all decommissioned structures shall be removed, and foundations covered with soil to facilitate re-vegetation, within three months of decommissioning. **Reason:** To ensure satisfactory reinstatement of the site upon cessation of the project.
13.	In the event that the proposed development causes interference with telecommunications signals, effective measures shall be introduced to minimise interference with telecommunications signals in the area. Details of these measures, which shall be at the developer's expense, shall be

	submitted to, and agreed in writing with, the planning authority prior to commissioning of the turbines and following consultation with the relevant authorities. **Reason:** In the interest of protecting telecommunications signals and of residential amenity.
14.	Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as constructed tip heights and co-ordinates of the turbines and wind monitoring masts. **Reason:** In the interest of air traffic safety.
15.	The developer shall ensure that all plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens. **Reason:** In the interest of the proper planning and sustainable development of the area.
16.	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, including any river crossings, immediately prior to commencing work in order to check for the presence of protected species in the vicinity. **Reason:** In the interest of protecting ecology and wildlife in the area.
17.	The developer shall facilitate the preservation, recording and protection of archaeological materials or features that may exist within the site. In this regard, the developer shall – (a) Notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, (b) Employ a suitably qualified archaeologist who shall monitor all site investigations and other excavation works, and

	(c) Provide arrangements, acceptable to the planning authority, for the recording and for the removal of any archaeological material which the authority considers appropriate to remove. In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination. **Reason:** In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.
18.	The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate annual bird surveys of this site. Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Arts, Heritage and the Gaeltacht **Reason:** To ensure appropriate monitoring of the impact of the development on the avifauna of the area.
19.	Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site, coupled with an agreement empowering the planning authority to apply such security or part thereof to the satisfactory reinstatement of the public road. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination. **Reason:** In the interest of traffic safety and the proper planning and sustainable development of the area.
20.	Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the

	satisfactory reinstatement of the site upon cessation of the project, coupled with an agreement empowering the planning authority to apply such security or part thereof to such reinstatement. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination. **Reason:** In the interest of orderly development and visual amenity and to ensure satisfactory reinstatement of the site.
21.	The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000, as amended. The contribution shall be paid prior to the commencement of development or in such phased payments as the planning authority may facilitate and shall be subject ABP-304685-19 Inspector's Report Page 70 of 70 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 the Board to determine the proper application of the terms of the Scheme. **Reason:** It is a requirement of the Planning and Development Act 2000, as amended, that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to 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.

Brendan Coyne
Planning Inspector
16th January 2024