

# Inspector's Report ABP 318723-23

Development	Alterations to the Cnoc Raithní (Knockranny) Wind Farm (Galway County Council pl. ref. no. 13/829 & ABP ref: 07.243094) comprising 11 wind turbines. An Environmental Impact Assessment Report (EIAR) & Natura Impact Statement (NIS) have been prepared & will be submitted to the planning authority with the application. Knockranny, Ardderroo, Letter, Moycullen, Co. Galway.	
Planning Authority	Galway County Council.	
Planning Authority Reg. Ref.	23225.	
Applicant(s)	Western Power Developments Ltd.	
Type of Application	Normal Planning Appeal.	
Planning Authority Decision	Grant Permission with Conditions.	

Type of Appeal

Third Party

Appellants	Knockranny Moycullen Wind Farm Action Group.
	Anne Hennessy.
	Maire Ni Raghallaigh
	John Rushe.
Observers	Micheal Ó Raghallaigh and Áine Ni
	Fhógartaigh.
	Marginalised Residents of Doon East
	Richard Bohan
Date of Site Inspection	13 <sup>th</sup> June 2024.
Inspector	Brendan Coyne

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# 1.0 Site Location and Description

- 1.1.1. The site of the proposed development is located in the townlands of Knockranny (Cnoc Raithni), Ardderroo (Na hArd-Doiriu), Letter (Leitir), and Moycullen, County Galway. The site is approximately 4.5 km northwest of Moycullen village and approx. 3.8 km southwest of Rosscahill village. Access to the site is via a private roadway, c. 3.4 km in length, extending west from a public road (L53453) and running approximately 2.06 km west of the N59 National route, a designated scenic route. This access road also serves several other large wind energy developments within the Galway Wind Park, as well as commercial forestry, farmland, and local properties. Ardderroo wind farm containing 25 no. turbines is located on adjacent lands to the west. The entire site spans approximately 78 hectares and has been granted permission on appeal (PA Ref. 13/829/ ABP Ref 07.243094) for a wind farm comprising 11 turbines, with an operational period of 25 years once commissioned.
- 1.1.2. Located on the eastern slopes of the East Connemara Mountains, the site features an undulating, upland rural landscape with a mix of commercial forestry, agriculture, and renewable energy uses. Surrounding the site are rural residential properties and agricultural holdings to the north, east, and south. It is bordered by An Sruthan Bui Stream to the south, An Sruthan Chnocan Raithni Stream to the north, and Abhainn na nArd Doiriú River to the west. The site drains into the Lough Corrib catchment to the east and north and into the Owenboliska-Cashla-Screeb catchment to the west and southwest. There are several lakes in the surrounding area, including Lough Fadda and Lough Naweelan, located 1.7km and 1km to the west of the site, Ardderroo Lough c. 1.9km to the southwest, Slieveaneena Lough c. 2.8km to the south and Lough Atavamore c. 2.4km on the southeast.
- 1.1.3. Two hills exist on the eastern and western edges of the site, with relatively flat ground in between. Existing Coillte access tracks, which cross existing streams, provide access to the main area of the site. Current land uses include commercial forestry, agriculture, and turbary, with land cover ranging from forest, woodland, and scrub to grassland, salt marsh, and swamp. The northeastern section of the site is designated as a Lake Environs landscape with a sensitivity rating of Special and a value rating of 3. The surrounding area to the west and south is designated as Uplands and Bog Landscape, with a high sensitivity rating and a value rating of 2.

# 2.0 Proposed Development

- 2.1. The application, as described in statutory notices, seeks permission for development consisting of alterations to the permitted Cnoc Raithni (Knockranny) Wind Farm (Galway County Council Planning Ref. No. 13/829 and An Bord Pleanála Ref: 07.243094) comprising the following;
  - 11 no. wind turbines with an overall ground-to-blade tip height of 150m (an increase of 19.5m & 9.5m from 130.5m & 140.5m, as previously permitted), a rotor blade length of 68m or 69m and a hub height of 81m or 82m.
  - Increase in turbine foundations with a 24m diameter and a depth of 3.4m.
  - Omission of the permitted on-site 110kV substation and underground cabling.
  - Provision of underground electrical (33kV) and communications cabling connecting the 11 wind turbines to the Ardderroo wind farm substation for the purposes of connection to the national grid, including a new cable service track (with watercourse/culvert crossings) and widening of an existing access road.
  - Extension of the Ardderroo substation within the existing substation compound, including control building extension, new 110kV transformer and electrical plant & apparatus.
  - All associated site development and ancillary works above and below ground in support of the above, including site drainage and tree felling (15.7 ha).
  - An operational period and planning permission duration to align with the existing permission (An Bord Pleanála Ref: 07.243094) is sought.
- 2.1.1. The development permitted under P.A. Ref. 13/829 / ABP Ref. 07.243094 was granted permission on appeal on the 19th of February 2016. A ten-year planning permission was granted (Condition No. 3), and the planning permission is valid for 25 years from the date of commissioning of the wind farm (Condition No. 4).

# Planning Authority Decision

## 2.2. Decision

Galway County Council GRANTED permission for the proposed development subject to 21 no. Conditions. Noted Conditions are summarised as follows:

- The development shall be carried out and completed according to the plans and particulars lodged on 8th June 2023 and revised details submitted on 26th October 2023 unless modifications are necessitated by other conditions
- All conditions associated with previous permissions for the site, specifically ABP Ref PL07.243094 (PA Ref 13/829), shall be strictly adhered to unless altered by subsequent conditions.
- This grant of permission will expire concurrently with the expiry of ABP Ref.
  07.243094, unless the turbines and associated infrastructure are erected before this date.
- 4. This permission shall be for a period of 25 years from the date of the first commissioning of the 11 turbines, the subject of this application.
- 5. All environmental mitigation and monitoring measures outlined in the Environmental Impact Assessment Report, the Natura Impact Statement, and other submitted plans shall be fully implemented, with a water quality monitoring program during the construction phase and oversight by an appointed Environmental Manager and Ecological Clerk of Works, who will also provide final sign-off on these measures.
- 6. The removal of site vegetation shall occur outside of the breeding season for the Marsh Fritillary Butterfly (Euphydryas Aurinia).
- 7. All mitigation measures for archaeology and cultural heritage specified in the EIAR shall be fully implemented, with the Construction Environment Management Plan including all archaeological or cultural heritage constraints. A final archaeological report detailing the results of all archaeological monitoring and investigations shall be submitted to the Planning Authority and the Department post-completion.

- 8. Details of aeronautical requirements, after consultation with the Irish Aviation Authority, shall be submitted to and agreed upon in writing with the Planning Authority before development starts. The final turbine coordinates shall also be provided to both authorities before turbine commissioning.
- All turbines shall be equipped with Type C, Medium intensity, Fixed Red obstacle lighting, operational 24/7 and visible to Night Vision equipment, emitting near Infra-Red light at or near 850 nanometers.
- 10. Noise mitigation measures as specified in the EIS shall be implemented to ensure that turbine noise does not exceed 5 dB(A) above background levels or 43 dB(A) L90,10min at nearby dwellings or sensitive receptors. A noise compliance monitoring program shall be submitted and agreed upon in writing with the Planning Authority before development commences.
- 11. Turbines shall be fitted with equipment to limit shadow flicker at nearby dwellings to less than 30 hours per year or 30 minutes per day, and a shadow flicker compliance monitoring program shall be agreed upon in writing with the Planning Authority before development starts. Compliance reports shall be submitted within 12 months of commissioning.
- 12. A protocol for assessing impacts on radio, television, or other telecommunications reception shall be agreed upon before development begins, and any interference shall be remedied according to an agreed methodology.
- 13. (a) Prior to the commencement of development, details shall be submitted for a Transport Management Plan covering road network use during construction, including a schedule of road and bridge protection measures. A condition survey and a plan for repair of any damage caused shall be agreed upon with the planning authority.
- 15. Prior to the commencement of development, the community gain proposals shall be submitted to and agreed in writing with the Planning Authority.
- 17. All plant and machinery shall be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.
- 18. The external finish of wind turbines, including masts and blades, shall be agreed upon with the Planning Authority prior to development. No advertising material is

allowed on any structure without prior planning permission. The access tracks within the site shall not be surfaced with tarmacadam or concrete, and roads and hardstanding areas shall be completed to the Planning Authority's satisfaction within three months of the wind farm's commissioning.

19. Details of amenity and public access arrangements shall be submitted to the Planning Authority within one year of the wind farm's commissioning for its written agreement.

# 2.3. Planning Authority Reports

# 2.4. First Report

2.4.1. A summary of issues raised in the initial planning report is summarised under the headings below:

#### 2.4.2. The Principle of the Proposed Development

- The proposal seeks to increase turbine heights to 150m and alter the grid connection via the Ardderroo substation.
- Power capacity will rise from 33MW to 46-49MW.
- Modifications include new foundations, underground cabling, and widening of the access road.
- Additional 2.45 hectares of coniferous tree felling and 12,900m<sup>3</sup> of peat excavation are required.
- The project aligns with the Local Authority Renewable Energy Strategy (LARES) and Galway County Development Plan.

# 2.4.3. Appropriate Assessment

- Potential impacts on Lough Corrib SAC, Connemara Bog Complex SPA/SAC, among others.
- Stage 2 Appropriate Assessment is required due to potential negative effects.
- Additional information is needed to assess risks and mitigation measures.

#### 2.4.4. Environmental Impact Assessment

- Increased turbine height would have a minimal visual impact on the landscape.
- Temporary increase in HGV trips during peak construction.
- No significant impact on local infrastructure, aviation, or telecommunications.
- Low risk of peat failure; additional peat excavation managed with mitigation.
- No adverse impact on surface water or groundwater quality.
- Adverse effects on bats; mitigation measures are in place.
- Potential effects on birds; mitigation measures are proposed.
- No significant impact on archaeological features.
- Compliance with noise limits; minor differences in noise levels.
- Short-term dust impacts during construction; no long-term adverse effects.
- Mitigation measures would prevent impacts on population and human health; shadow flicker is addressed.
- Interactions of the Foregoing Matrix shows reduced major interactions/impacts.

#### 2.4.5. Further information was requested, requiring the following:

- 1. Natura Impact Statement and CEMP Updates Address water quality impacts, additional silt fencing, and invasive species survey.
- 2. Population and Human Health Review shadow flicker analysis and ice throw risk.
- **3.** Road Profile and Drainage Measures Submit detailed design drawings and drainage details.
- **4.** Technical Roads Assessment Ensure compliance with national road guidelines and assess traffic impacts.

#### 2.5. Second Report in response to Further Information submitted:

- Natura Impact Statement and CEMP Updated to address drainage and surface water management.
- Shadow Flicker Mitigation measures would eliminate shadow flicker; no re-siting of turbines needed.
- Ice Throw Risk Low risk; turbines include ice detection and anti-icing technologies.

- Road Profile and Drainage Measures Detailed design drawings were submitted in accordance with TII guidelines.
- Technical Roads Assessment Minimal additional impact on road infrastructure; impacts are temporary.
- The development would not adversely impact Natura 2000 sites; mitigation measures are sufficient.
- The EIAR adequately identifies and assesses environmental effects no significant negative impacts.
- The proposed development aligns with National, Regional, and Local Planning Policy.
- No significant environmental effects are expected with the implementation of the proposed mitigation measures.
- The development would not adversely affect the integrity of European sites.
- Compliance with relevant policies and guidelines is ensured.
- A grant of permission is recommended with conditions, including community gain proposals and a road network bond.

# 2.6. Other Technical Reports

# 2.6.1. Roads Department

- The applicant should clarify the proposed and existing road profile, including drainage measures, within the red line holding and provide a detailed survey with proposed datums and changes to the internal layout.
- Detailed design drawings of proposed road widening works and new access track road profile, including drainage measures, using site-specific cross and longitudinal sections, shall be provided.
- Suitable hydrocarbon control measures should be ensured due to likely fuel/oil runoff from trafficked areas.
- Revised culvert crossing details should be submitted for required culvert headwalls according to TII Design of Outfall and Culvert Details DN-DNG-03071.
- Revised over-the-edge drainage design should be submitted according to TII Edge of Pavement Design DN-DNG-03062, considering alternative piped filter drain measures and proposed embankment gradients.

- The applicant should clarify and submit detailed drawings demonstrating the positioning of turbines adjacent to LS-55348 public road, using detailed cross sections and necessary chainages and datum survey.
- The applicant should prepare a Technical Roads Assessment demonstrating strict compliance with "DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities (2012)" to evaluate potential adverse impacts from generated traffic and any potentially increased traffic from existing access to national roads where speed limits exceed 60 km/h.

# 2.7. Prescribed Bodies

- 2.7.1. Dept. of Housing, Local Government and Heritage Development Applications Unit: recommendations summarised as follows:
  - The EIAR submitted includes a desk-based Archaeology and Cultural Heritage assessment.
  - The Department largely agrees with the findings of the EIAR concerning Archaeology and Cultural Heritage.
  - It is recommended that conditions from OPR Practice Note PN03: Planning Conditions (October 2022) be adapted and applied to this project, focusing on the findings from the EIAR.
  - Required archaeological mitigation measures, as outlined in EIAR Chapter 11, Section 11.5.1, should be fully implemented, with adjustments only permissible to comply with other conditions.
  - The Construction Environment Management Plan (CEMP) should detail all archaeological and cultural heritage constraints, describing potential impacts and mitigation strategies to protect these during the site preparation and construction phases.
  - A comprehensive final archaeological report summarising all archaeological monitoring and investigative activities should be provided to the Planning Authority and the Department upon completion of the works, including any post-excavation analyses. All associated costs are the responsibility of the developer.
- 2.7.2. **Transport Infrastructure Ireland (TII) –** recommendations summarised as follows:

- The development should adhere to official policies on development affecting national roads as per the Department of Environment, Community and Local Government (DoECLG) Spatial Planning and National Roads Guidelines for Planning Authorities (2012).
- All actions of the proposed development must comply with the Transport (Traffic Impact) Assessment recommendations.
- 2.7.3. **Department of Defence –** recommendations summarised as follows:
  - All turbines should be equipped with Type C, Medium intensity, Fixed Red obstacle lighting with a minimum output of 2,000 candela, ensuring visibility in all azimuth directions and operational 24/7.
  - Obstacle lighting should be either incandescent or, if using LEDs or other types, must be compatible with Night Vision equipment and emit light at or near 850 nanometres (nm) on the near Infra-Red (IR) spectrum, with intensity similar to that in the visible spectrum.
  - It is noted that any requirements from the Irish Air Corps (IAC) regarding this development are separate from those of the Irish Aviation Authority (IAA).

# 3.0 Planning History

3.1.1. There are several previous planning applications related to the site and adjoining lands, primarily concerning large electricity infrastructure developments. These applications and decisions are summarised as follows:

# 3.1.2. Subject Site:

**P.A. Ref. 13/829 & ABP 07.243094**: Permission was granted on 19th February 2016 for a wind farm development of 11 turbines (maximum height 140.5m), a permanent meteorological mast (up to 90m), and a 110kV substation. The proposal included a new site entrance, internal roads, underground cabling, and a peat deposition area (207 sqm).

It is noted that permission was not sought for the project grid connection, but the prepared EIS assessed the envisaged option at that time, namely a 2km long

underground 110kv cable route from the windfarm to the permitted 110/38kV West Galway substation in Letter, Co. Galway.

Notable conditions are summarised as follows:

- 1. Development shall adhere to submitted plans, including amendments from 2013 and 2015.
- 2. All mitigation measures from the Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) shall be implemented.
- 3. Development allowed for ten years from the date of the Order,
- 4. 25-year operational lifespan permitted from the date of commissioning of the wind farm.
- 5. Specified turbine tip heights: 140.5m for turbines 5, 6, 7, 9, 11, and 14; 130.5m for turbines 1, 2, 3, 8, and 13. Design details are to be approved before development commences.
- 6. Vegetation removal is restricted to outside the breeding season of the Marsh Fritillary Butterfly.
- 7. Compliance with aeronautical requirements agreed with the Irish Aviation Authority is required prior to the commencement of development.
- 8. Noise mitigation measures shall be fully implemented. Wind turbine noise shall not exceed 5 dB(A) above background noise levels or 43 dB(A) L90,10min when measured externally at dwellings or other sensitive receptors. A noise compliance monitoring program shall be agreed in writing with the planning authority before development commences, with results submitted within six months of commissioning.
- Shadow flicker from the development shall not exceed 30 hours per year or 30 minutes per day at existing or permitted dwellings or other sensitive receptors. A compliance report must be submitted within 12 months of commissioning the wind farm.

**P.A. Ref. 11/375 & ABP 07.239053**: Permission was refused on 8th August 2012 for a wind farm with 14 turbines (up to 140m). The main reasons for refusal include:

 The proposed development would have a significant detrimental impact on the archaeological and cultural heritage of the site, contravening policies in the Galway County Development Plan.

- 2. There is an unacceptable risk of environmental damage due to unresolved geotechnical/peat slippage concerns at turbine locations.
- The archaeological and geotechnical information provided was insufficient, particularly regarding the locations of turbines 8 and 13, despite the Inspector's recommendation.

**ABP Ref. 07.303086 (SID)**: Permission was granted on 17th July 2019 for 25 wind turbines, a permanent meteorological mast, a 110kV substation, and associated site works.

**P.A. Ref. 13/658**: Permission was granted on 12th August 2013 for modifications to roads and tracks for the Galway Wind Park turbine delivery route, including improvements to the N59 junction, and the L53453-0 Doon Road, and associated forestry tracks.

# 3.1.3. Other Renewable Energy Projects in the Surrounding Area

**P.A. Ref. 14/533**: Permission was granted for relocating meteorological masts and associated works at Cloosh and Seecon Wind Farms.

**P.A. Ref. 11/1573 & ABP PL07.240612**: Permission was granted on 24th January 2014 for a wind farm with 12 turbines (up to 126m), an anemometry mast, substation, underground connection, and associated works.

**P.A. Ref. 11/429 & ABP PL07.239118**: Permission was granted on 28th October 2011 for a wind farm with 23 turbines (up to 140.5m), two meteorological masts, substation, borrow pits, and internal access roads.

**P.A. Ref. 10/1454**: Permission was granted for a wind farm with 8 turbines (up to 130m) and associated structures, including a meteorological mast and substation.

**P.A. Ref. 10/303 (Cloosh Wind Farm)**: Permission was granted for 22 wind turbines (up to 140.5m), a meteorological mast, substation, borrow pits, and internal access roads.

**P.A. Ref. 10/1225 & ABP PL07.238762**: Permission was granted on appeal for a wind farm with 7 turbines (up to 119m), an anemometry mast, underground connection, and associated works.

**P.A. Ref. 09/573 & ABP PL07.235051**: Permission was granted on appeal on 9th March 2010 for alterations to hub heights, blade lengths, and wattage increase from 1.75MW to 2.3MW at Lettergunnet and Gerrycrith.

**P.A. Ref. 09/1326 & ABP PL07.234861**: Permission was granted on appeal on 9th March 2010 for similar alterations at Derrycrih, Spiddal.

**P.A. Ref. 07/5148**: Permission was granted for an 8-turbine wind farm (up to 100m) with associated structures at Lettercraffroe, Oughterard.

#### : P.A. Ref. 07/4635 & ABP PL07.229362

Permission was refused on appeal for a 6-turbine wind farm at Lealetter, Moycullen Bogs Natural Heritage Area, due to impact on the natural heritage area.

**P.A. Ref. 06/5623**: Permission was refused for a 14-turbine wind farm due to environmental concerns.

**P.A. Ref. 03/6992**: Permission was granted for a 20-turbine wind farm with a meteorological mast and associated infrastructure at Uggool, Oughterard.

**P.A. Ref. 03/4656**: Permission was granted for an 8-turbine wind farm with a control building, tracks, and underground cabling at Leitir Gungaid and Doire Chrith.

# 4.0 **Policy and Context**

# 4.1.1. Galway County Council Development Plan 2022-2028

4.1.2. The statutory plan for the area includes the following relevant Development Plan policies, objectives, and provisions:

#### **Chapter 7: Infrastructure, Utilities and Environmental Protection**

Policy Objective WS 2 Protection of Water Supplies Policy Objective WM 5 Construction and Environmental Management Plans Policy Objective WM 6 Waste Management Policy Objective EG 2 Delivery of Electricity and Gas Infrastructure Section 7.9.2 Noise Pollution **Policy Objective NP3 Noise Impact Assessments**  To require an assessment of impact of the development on noise levels, having regard to the provisions of the Environmental Protection Agency Acts 1992 and 2003 and the EPA Noise Regulations 1994 when assessing planning application.

# Policy Objective NP 4 Noise Pollution and Regulation

Restrict development proposals causing noise pollution in excess of best practice standards and regulate and control activities likely to give rise to excessive noise, other than those activities which are regulated by the EPA.

#### Policy Objective NP Noise Mitigation Measures

Section 7.9.4 Soil Quality

#### Policy Objective SQ 1 Soil Impact Assessments

Ensure good soil quality throughout the county by requiring developments of a certain nature (as specified in the relevant environmental legislation) to carry out assessments of the impact of the development on soil quality.

#### Policy Objective SQ 2 Soil Protection Measures

To ensure that adequate soil protection measures are undertaken where appropriate.

# Policy Objective SQ 3 Soil Protection, Contamination and Remediation

#### **Chapter 8: Tourism and Landscape**

Section 8.13.1 Landscape Character

Map 8.1: Landscape Character Areas

Section 8.13.2 Landscape Sensitivity

Map 8.2: Landscape Sensitivity

# Policy Objective LCM Preservation of Landscape Character

Preserve and enhance the character of the landscape where, and to the extent that, in the opinion of the Planning Authority, the proper planning and sustainable development of the area requires it, including the preservation and enhancement, where possible of views and prospects and the amenities of places and features of natural beauty or interest.

# Policy Objective LCM 2 Landscape Sensitivity Classification

The Planning Authority shall have regard to the landscape sensitivity classification of sites in the consideration of any significant development proposals and, where

necessary, require a Landscape/Visual Impact Assessment to accompany such proposals. This shall be balanced against the need to develop key strategic infrastructure to meet the strategic aims of the plan.

#### Policy Objective LCM 3 Landscape Sensitivity Ratings

Consideration of landscape sensitivity ratings shall be an important factor in determining development uses in areas of the County. In areas of high landscape sensitivity, the design and the choice of location of proposed development in the landscape will also be critical considerations.

Section 8.13.3 Protected Views and Scenic Routes

Map 8.3 Scenic Routes

Map 8.4 Protected Views

#### Policy Objective PVSR 1 – Protected Views and Scenic Routes

Preserve the protected views and scenic routes as detailed in Maps 8.3 and 8.4 from development that in the view of the Planning Authority would negatively impact on said protected views and scenic routes. This shall be balanced against the need to develop key infrastructure to meet the strategic aims of the plan.

# Chapter 14: Climate Change, Energy, and Renewable Resource - Policy Objectives Related to Wind Energy

Policy Objective RE 1: Renewable Energy Generation and Ancillary Facilities:

To facilitate and support appropriate levels of renewable energy generation and ancillary facilities in the county to meet national, regional, and county renewable energy targets. This aims to facilitate a reduction in CO2 emissions and promote a low carbon economy

#### Policy Objective RE 3 Wind Energy Developments:

Promote and facilitate wind farm developments in suitable locations, having regard to areas of the County designated for this purpose in the Local Authority Renewable Energy Strategy. The Planning Authority will assess any planning application proposals for wind energy production in accordance with the Local Authority Renewable Energy Strategy, *the DoEHLG Guidelines for Planning Authorities on Wind Energy Development, 2006* (or any updated/superseded documents), having

due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy.

#### Policy Objective RE 5 Renewable Energy Strategy

Support and facilitate the sustainable development and the use of appropriate renewable energy resources and associated infrastructure within the County having due regard to the Habitats Directive and to the detailed policy objectives and Development Standards set out in the Local Authority Renewable Energy Strategy.

# Policy Objective RE 7 Renewable Energy Generation -Transition to a Low Carbon Economy

To facilitate and support appropriate levels of renewable energy generation in County Galway, considering the need to transition to a low carbon economy and to reduce dependency on fossil fuels.

#### Policy Objective RE 9 Wind Energy Buffer Zone - An Spidéal to Minna

It is a policy objective of Galway County Council that there would be a buffer of a distance of 6km inland from the coast, where there will be no designation of lands as being either "Acceptable in Principle" or "Open for Consideration" or "Strategic Area" for wind energy development between An Spidéal to Minna in Cois Fharraige.

Chapter 10: Natural Heritage, Biodiversity and Green/Blue Infrastructure Policy Objective NHB 1 Natural Heritage and Biodiversity of Designated Sites, Habitats and Species

Policy Objective NHB 2 European Sites and Appropriate Assessment Policy Objective NHB 3 Protection of European Sites Policy Objective NHB 4 Ecological Appraisal of Biodiversity Policy Objective NHB 5 Ecological Connectivity and Corridors Policy Objective NHB 7 Mitigation Measures Policy Objective NHB 9 Protection of Bats and Bats Habitats Policy Objective P 1 Protection of Peatlands Policy Objective IW 1 Inland Waterways Chapter 12 Architectural, Archaeological and Cultural Heritage Chapter 15: Development Management Standards

# DM Standard 69: Wind Energy

When assessing planning applications for wind energy developments the Council will have regard to;

- the Wind Energy Development Guidelines for Planning Authorities, DoEHLG,
  (2006) and any amendments to the Guidelines which may be made; and
- the Local Authority Renewable Energy Strategy;

In addition to the above, the following local considerations will be taken into account by the Council in relation to any planning application;

- Impact on the visual amenities of the area;
- Impact on the residential amenities of the area;
- Scale and layout of the project, any cumulative effects due to other projects and the extent to which the impacts are visible across the local landscape;
- Visual impact of the proposal with respect to protected views, scenic routes and sensitive landscapes (Class 2, 3 and 4);
- Impact on nature conservation, ecology, soil, hydrology, groundwater, archaeology, built heritage and public rights of way;
- Impact on ground conditions and geology;
- Consideration of falling distance plus an additional flashover distance from wind turbines to overhead transmission lines;
- Impact of development on the road network in the area; and
- Impact on human health in relation to noise disturbance (including consistency with the Word Health Organisations 2018 Environmental Noise Guidelines for the European Region), shadow flicker and air quality;
- Proposals for the decommissioning of the project following cessation of use or expiry of the permitted duration of use.

# Appendix 1: Renewable Energy Strategy

Appendix 4: Landscape Character Assessment

## 4.2. Other Relevant Government Policy / Guidelines

#### 4.2.1. National Context

National Planning Framework – Project Ireland 2040, DoHP&LG 2018 This plan sets a strategic national planning framework, emphasizing the transition to a low carbon, climate-resilient society. It highlights the role of rural areas in renewable energy supply, aiming to harness the country's renewable energy potential and transition to a competitive, low carbon economy by 2050. Key National Policy Objectives (NPOs) include:

- **NPO 21:** Enhance rural competitiveness through innovation and diversification into new sectors and services, including climate change and sustainability.
- **NPO 54:** Integrate climate action into planning to support national climate policy targets for mitigation and adaptation.
- **NPO 55:** Promote renewable energy use and generation in appropriate locations to meet national low carbon economy objectives by 2050.

**National Development Plan 2021-2030** This plan supports the NPF, providing a framework for investment priorities, including strategic investment in renewable energy.

**National Energy and Climate Plan, 2021-2030** Prepared under Regulation (EU) 2018/1999, this plan outlines Ireland's energy and climate policies for 2021-2030 and aims for at least 55% renewable energy in electricity by 2030. It sets specific targets for onshore and offshore wind, aiming for 5900MW of onshore wind capacity by 2025.

**Climate Action Plan 2024 -** sets ambitious targets to reduce emissions across various sectors, aiming for a 75% reduction in emissions based on 2018 levels by 2030 through a significant upscaling of renewable energy, particularly wind. Key objectives include accelerating the delivery of onshore wind, offshore wind, and solar projects, and deploying at least 9 GW from onshore wind projects by 2030. This plan underscores the vital role of wind energy in achieving a low-carbon economy and aligns with the broader goal of transitioning to a more sustainable and resilient energy system.

Wind Energy Development Guidelines - Guidelines for Planning Authorities, June 2006 These guidelines balance government renewable energy policy with proper planning and sustainable development, addressing impacts on residential amenity, environment, nature conservation, and landscape sensitivity.

**Draft Wind Energy Development Guidelines, 2019** Proposed amendments include stricter noise limits, robust monitoring and reporting, and a 500m setback from houses, augmented by a setback of 4x turbine height from sensitive receptors.

**National Landscape Strategy for Ireland, 2015-2025** This strategy integrates landscape into sustainable development, identifying and describing landscape character and providing an integrated policy framework for landscape protection and management.

The Planning System and Flood Risk Management Guidelines, 2009 These guidelines aim to avoid inappropriate development in flood-prone areas, advocating a sequential risk assessment approach and a justification test.

# 4.2.2. Regional Context

Northern and Western Regional Spatial & Economic Strategy 2020-2032 Aligns with Project Ireland 2040, the NPF, and the National Development Plan 2018-2027, coordinating City & County Development Plans and promoting sustainable electricity generation capacity. Key Regional Policy Objectives (RPOs) include:

- RPO 4.17: To position the region to avail of the emerging global market in renewable energy by stimulating the development and deployment of the most advantageous renewable energy systems
- RPO 4.18: Support the development of secure, reliable and safe supplies of renewable energy, to maximise their value, maintain the inward investment, support indigenous industry and create jobs.
- **RPO 8.1:** The Assembly support the development of a safe, secure and reliable electricity network and the transition towards a low carbon economy centred on energy efficiency and the growth projects outlined and described in this strategy.

#### 4.2.3. Other Relevant Policy Documents

- Ireland's Transition to a Low Carbon Energy Future 2015-2030
- Climate Action and Low Carbon Development (Amendment) Act (2021)
- Climate Action Charter for Local Authorities (2019)
- Climate Change Sectoral Adaptation Plan (2020)
- Circular PL 20-13 Review of Wind Energy and Renewable Energy Policies in Development Plans
- 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)
- 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 the Association of Acoustic Consultants of Ireland

# 4.2.4. EU Legislation/Policy

**Renewable Energy Directive 2018/2001/EU** Sets an EU target of at least 32% renewable energy by 2030, requiring member states to set national contributions in their energy and climate plans.

**Climate and Energy Policy Framework 2030** Outlines EU climate and energy policies for 2020-2030, targeting a 40% reduction in greenhouse gas emissions and a 32% share of renewable energy consumption by 2030.

**Effort Sharing Regulation (EU) 2018/842** Obligates member states to reduce greenhouse gas emissions 30% below 2005 levels by 2030, contributing to the Paris Agreement objectives.

**EU Commission European Green Deal 2019** Aims for net-zero greenhouse gas emissions in the EU by 2050 and a 55% reduction by 2030, transforming EU and national economies towards environmental sustainability.

#### **Other EU Policy/Strategies**

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

Directive 2008/50/EC on ambient air quality and cleaner air for Europe

EU Adaptation Strategy 2021

# 4.3. Natural Heritage Designations

#### 4.4. Natura 2000 European Sites

- 4.4.1. The site is not located within any Natura 2000 site. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) within the surrounding area include the following:
  - Connemara Bog Complex SAC (002034) c. 0.1km to the south
  - Ross Lake and Woods SAC (001312) c. 2.6km to the northeast
  - Gortnandarragh Limestone Pavement SAC and pNHA (001271) c. 4.9km to the northeast
  - Connemara Bog Complex SPA (004181) c. 5.2km to the southwest and west

- Lough Corrib SAC (000297) 5.4km to the northeast, east, and northwest
- Gortnandarragh Limestone Pavement SAC (001271) c. 5.1km to the northeast
- Lough Corrib SPA (004042) c. 7.4km to the east and north
- Galway Bay Complex SAC (000268) c. 12.3km to the southeast
- Inner Galway Bay SPA (004031) c. 14km to the southeast
- Maumturk Mountains SAC (002008) c. 18.9km to the northwest
- Lough Carra/Mask Complex SAC (001774) c. 21km to the northwest

#### 4.5. National Designations

- 4.5.1. Natural Heritage Areas and Proposed Natural Heritage Areas within the surrounding area include the following:
  - Connemara Bog Complex pNHA (002034) c. 0.1km to the south
  - Moycullen Bogs NHA (002364) c. 1.5km to the southeast
  - Oughterard District Bog NHA (002431) c. 1.9km to the northwest
  - Ross Lake and Woods pNHA (001312) c. 2.6km to the northeast
  - Drimcong Wood pNHA (001260) c. 4km to the southeast
  - Gortnandarragh pNHA (001271) c. 4.9km to the northeast
  - Ballycuirke Lough pNHA (000228) c. 6.8km to the southeast
  - Lough Corrib pNHA (000297) c. 7.5km to the east and north
  - Furbogh Wood pNHA (001267) c. 10km to the southeast
  - Galway Bay Complex pNHA (000268) c. 12.3km to the southeast

# 5.0 **The Appeal**

- 5.1.1. Four appeals were received from the following parties:
  - Knockranny Moycullen Wind Farm Action Group
  - Anne Hennessy
  - John Rushe

- Maire Ni Raghallaigh
- 5.1.2. The issues raised in the grounds of appeal have been amalgamated and summarised as follows:

#### 5.1.2.1. Wind Farm Development in a "Not Normally Permissible" Area:

- The site of the proposed development is classified as "Not Normally Permissible" in the Galway County Development Plan 2022-28 due to environmental sensitivity, proximity to residential areas, and impact on natural and cultural heritage.
- Allowing development in this area would set a concerning precedent and contradict planning principles.

#### 5.1.2.2. Visual Impact:

- The increase in turbine height from 130m to 150m would significantly impact the visual landscape, making the turbines more dominant and intrusive.
- This would affect both the immediate vicinity and distant views, altering the character of the landscape and potentially reducing its attractiveness for tourism.
- The visual impact could diminish residents' sense of place and well-being and harm the local economy reliant on tourism.

#### 5.1.2.3. Shadow Flicker:

- Taller turbines would cause shadow flicker, affecting six properties and posing health risks such as headaches and exacerbating conditions like epilepsy or autism.
- Effective mitigation strategies and ongoing assessment are necessary to minimise these impacts.

#### 5.1.2.4. Noise Pollution:

- The anticipated increase in noise levels from taller turbines could lead to sleep disturbance, stress, and other health issues for nearby residents.
- The developer's noise impact assessment is outdated and must be updated to reflect current conditions and cumulative noise impacts from multiple wind farms.
- Previous compliance reports show noise levels close to the maximum threshold, raising concerns about potential non-compliance.

#### 5.1.2.5. Health Impacts:

- There is an inadequate assessment of health impacts, including stress, sleep disturbance, and potential exacerbation of medical conditions due to noise and shadow flicker.
- A thorough, evidence-based analysis is needed, considering both direct effects and cumulative, long-term implications.

#### 5.1.2.6. EIA and AA Issues:

- Missing sections of the EIAR and appendices, and outdated surveys and modelling.
- Inadequate cumulative impact assessment for the EIAR and Appropriate Assessment (AA).
- The applicant failed to update mitigation measures from the original development, using outdated conditions to screen out impacts.
- Insufficient consideration of cumulative impacts from multiple wind farms in the area.

#### 5.1.2.7. Biodiversity:

- The development poses significant risks to local wildlife and biodiversity, including potential effects on avian and bat populations, local flora and fauna, and habitat disruption and fragmentation.
- There are concerns about sensitive ecological areas, and the cumulative impact of the wind farm combined with other existing or proposed developments must be considered.
- The EIAR should be critically analysed for comprehensiveness and scientific rigour, including the adequacy of baseline data, the scope of impact studies, and the effectiveness of proposed mitigation measures.
- Independent environmental studies may be necessary to validate or challenge the developer's findings.
- A thorough, unbiased assessment of environmental impacts is essential to prevent irreversible harm to the local ecosystem.

#### 5.1.2.8. **Ornithology:**

• Concerns about the impact on avian populations, particularly the Golden Plover.

- An Bord Pleanála's previous refusal of this development, citing concerns about impacts on Golden Plover, remains relevant.
- Inadequate assessment of the incremental negative impact of larger turbines on the ornithological population.
- Lack of comprehensive data on the collision risk, disturbance, displacement, or habitat loss effects on key ornithological receptors.
- The EIAR inadequately addresses cumulative effects on bird populations from existing and proposed wind farms.

# 5.1.2.9. Inadequate Consultation:

- The developer's consultation process was flawed, with insufficient communication and engagement with local residents.
- Galway County Council's refusal to meet with residents and lack of onsite inspection exacerbated the issue.

#### 5.1.2.10. Community Benefits:

- The proposal fails to offer substantial benefits to the local community while imposing significant adverse impacts.
- There is a lack of detailed and fair community benefit schemes, with no specific plans provided for the impacted community.

# 5.1.2.11. **Decommissioning and Disposal:**

- Concerns about the long-term impact of decommissioning and disposal of turbines, including environmental soundness and financial viability.
- The decommissioning plan should address the environmental impact of dismantling turbines and include a detailed waste management plan.

# 5.1.2.12. Study Area Considerations:

- The study area for the project is insufficiently expansive, failing to capture the full impact, especially cumulative effects from adjacent wind farms.
- A transparent and scientifically sound methodology for defining the study area is crucial.

#### 5.1.2.13. **Property Devaluation:**

- Potential devaluation of properties near the proposed wind farm due to visual intrusion, noise pollution, and shadow flicker.
- An objective assessment of the potential impact on property values is necessary, with consideration of compensation.

#### 5.1.2.14. Administrative Issues

- Possible errors in pre-planning consultations and statutory requirements, such as missing pre-planning minutes and incomplete EIAR documents.
- The EIAR was split into non-searchable documents, and several sections appear to be missing, impacting the ability to review the application thoroughly.
- There is a question of whether written confirmation from statutory undertakers for developments involving public roads was submitted.

#### 5.1.2.15. Section 50 Consent Required

- Concerns over the need for Office of Public Works (OPW) consent for construction activities affecting watercourses.
- Consultation with the OPW is necessary to avoid adverse hydraulic effects from new or altered bridges and culverts.

# 5.1.2.16. Peat Instability:

- Concerns about peat stability and the risk of slippage, especially given increased rainfall.
- Request for an independent expert review of peat stability documents to assess the risk of major accidents.

# 5.1.2.17. **Other Issues:**

- Impact of obstacle lighting on the landscape, bats, insects, birds, and the local community.
- Missing noise and vibration chapters from the planning portal site, impacting the ability to assess the application's validity.

 Lack of up-to-date waterbody status assessments and cumulative hydromorphology modelling, failing to account for the impact on water quality from multiple wind farms and forestry operations.

#### 5.2. Applicant Response

5.2.1. The response received from HWP Planning Consultants, representing the Applicant, is summarised as follows:

#### 5.2.1.1. **Principle of Development:**

- The applicants assert the appropriateness of the site for wind farm development remains valid.
- Changes in the 2022 LARES place some turbines in 'Not Normally Permissible' areas, but this does not preclude development.
- Existing planning permission and site history support the development.
- The applicants highlight consistency with National, Regional, and Local Planning Policy.

# 5.2.1.2. **Potential Visual and Amenity Impacts:**

- Detailed assessments show that the minor differences in turbine design would not materially impact the visual landscape.
- The LVIA in Chapter 4 of the EIAR and verified photomontages support this conclusion.
- The site's undulating landscape can accommodate the development without undue visual impacts.

# 5.2.1.3. Shadow Flicker:

- Effective mitigation strategies will be implemented to ensure compliance with national guidelines.
- The Shadow Flicker Analysis Report demonstrates compliance with the 2006 Wind Energy Development Guidelines.
- The applicant commits to measures to prevent shadow flicker exceedances, ensuring no increase over the Permitted Development.

#### 5.2.1.4. Noise:

- The applicant's response addresses potential noise level increases due to turbine alterations.
- The EIAR compares noise levels, showing slight increases at some receptors but remaining within permissible limits.
- The noise assessment follows the "Good Practice Guide to the Application of ETSU-R-97."

#### 5.2.1.5. **Peat Stability Assessment:**

- Comprehensive methodology used in the Geotechnical and Peat Stability Assessment confirms no significant risk of large-scale peat instability.
- The applicant addresses climate change concerns and confirms robust geotechnical assessment.

#### 5.2.1.6. **Ornithology and Bat Assessments:**

- The EIAR follows best practice guidelines for assessing impacts on ornithology and bats.
- The cumulative impact assessment concludes no significant residual effects on avifauna.

# 5.2.1.7. Human Health Impact Assessment and Impact on Property Values:

- The EIAR addresses potential health impacts and property devaluation.
- Studies, including a Scottish survey, indicate no consistent negative effect of wind turbines on property values.

# 5.2.1.8. **Community Benefit Details:**

- The proposed development would provide a significant increase in the community gain fund, proportional to the increased energy output.
- The potential uplift in community benefits ranges from 40% to 50%.

# 5.2.1.9. **Community Consultation:**

- The applicant engaged in extensive community consultation, exceeding the requirements set out in existing and emerging guidelines.
- Details of door-to-door consultations, public information days, and ongoing engagement are provided.

## 5.2.1.10. Study Area:

- The EIAR's study area is defined transparently and scientifically, considering population, biodiversity, air quality, noise, cultural heritage, water, material assets, and landscape impacts.
- A 10km radius is generally considered reasonable, with broader parameters for specific chapters.

# 5.2.1.11. Other Issues Raised:

- Decommissioning: Effects will not differ from the permitted development, with a detailed plan included in the CEMP.
- Procedural Issues: Addressed concerns about pre-planning meetings, electronic copies of the EIAR, and missing documents.
- The applicant clarified that a pre-planning meeting was held in January 2023, not 2013 as mistakenly stated in the Planning Report, and confirmed that electronic, searchable copies of the EIAR were provided, addressing concerns about missing documents.
- The Embodied Carbon Assessment, based on the Scottish Carbon Calculator Tool, is included in EIAR Appendix 13-1, and a Water Framework Directive Assessment is provided in EIAR Appendix 8-1.
- Mitigation Measures: The EIAR includes comprehensive mitigation measures, and Section 50 consents are typically obtained post-planning.
- Impact of Turbine Safety Lighting: Addressed concerns about the ecological impact of lighting required by the Department of Defence, confirming that the impact on the landscape, bats, insects, and birds was considered and mitigated in the ecological Expert Response Statement
- 5.2.2. Supporting documentation lodged with the appeal includes the following;
  - Appeal Landscape Response Statement prepared by Macroworks Ltd.

- Appeal Noise Response Statement prepared by AWN Consulting Ltd.
- Appeal Ecology Response Statement prepared by Greenleaf Ecology Ltd.
- Appeal Geotechnical Response Statement prepared by JB Barry and Partners Ltd.
- 5.2.3. Appendices lodged with the appeal include the following;
  - Shadow Flicker Assessment (May 2023) prepared by MWP Consulting.
  - Chapter 12 of the EIAR Noise and Vibration.

#### 5.3. Planning Authority Response

5.3.1. The Planning Authority did not respond to the grounds of appeal.

#### 5.4. **Observations**

- 5.4.1. Three observations were received from:
  - Marginalised Residents of Doon East
  - Aine Ní Fhógartaigh and Michael Ó Raghallaigh
  - Richard Bohan
- 5.4.2. The issues raised by observers are amalgamated and summarised as follows:

# 5.4.2.1. Road Usage and Traffic:

- Objection to the unauthorised use of local road L53453, with a demand for an alternative access route due to disruption.
- Increased traffic would compromise road safety, increase air and noise pollution, and disrupt community well-being, including heavy machinery operations at night.
- Lack of complete footpaths on L53453 and N59 poses significant risks with increased traffic.
- 5.4.2.2. Community and Developer Trust:

- Developer's history of broken promises and disregard for community welfare, including failing to display planning site notices and using L53453 despite commitments to an alternative route.
- No agreement exists for the use of L53453, supported by concerns from the Department of Transport Infrastructure Ireland.

# 5.4.2.3. Environmental and Health Impacts:

- Concerns about the project's impact on quality of life, including noise, flickering light, and environmental well-being.
- Potential negative impacts on local wildlife, habitats (particularly Natura 2000 sites), and the region's archaeological and historical landscape.
- No effective noise or vibration monitoring systems in place despite evident concerns.

# 5.4.2.4. Gaeltacht and Cultural Impacts:

- The area is a designated Gaeltacht with special protections under the Galway County Development Plan 2022-2028.
- The project could discourage people from living in the area, harming the local Irish-speaking community and cultural activities.
- Insufficient study on the project's implications for the Gaeltacht's language and culture, which are vulnerable and require protection.

# 5.4.2.5. **Procedural and Legislative Concerns:**

- Insufficient details about the appeal ABP Ref PL07.318723 published on An Bord Pleanála's website.
- Request for An Bord Pleanála to ensure the assessment and decision comply with all environmental protection and planning legislation.
- Particular concern for assessments under the Birds and Habitats Directives, the Environmental Impact Assessment Directive, and the Water Framework Directive.

# Further Responses: None

# 6.0 Assessment

- 6.1.1. Having undertaken a site visit and having regard to the relevant policies pertaining to the subject site, the nature of existing uses on and in the vicinity of the site, the nature and scale of the development of the subject application, and the nature of existing and permitted development on and in the vicinity of the site, I consider that the main issues pertaining to the proposed development can be assessed under the following headings:
  - Alignment with National, Regional, and County Renewable Energy Policy
  - Compliance with Development Plan policy
  - Public Consultation
  - Procedural Issues
  - Landowner Consent
  - Duration of Permission and Operational Period
  - Environmental Impact Assessment
  - Appropriate Assessment

#### 6.2. Alignment with National, Regional, and County Renewable Energy Policy

6.2.1. The Climate Action Plan 2024 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. The proposed pathway includes a more rapid build-out of renewable generation capacity, including wind power generation technologies. As stated in the Non-Technical Summary and Section 2.3.2 of the EIAR, the proposed 11 wind turbines have an estimated export capacity of 13.86 MW to 16.5 MW, depending on the final choice of turbine. The annual output is projected to range between approximately 143 and 151 GWh per annum. This would supply approximately 34,000 to 36,000 Irish households with electricity per year, based on the average Irish households using 4.2 MWh of electricity. 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.

### 6.3. **Compliance with Development Plan Policy**

- 6.3.1. Third-party appellants object to the proposed development on the grounds that the wind farm is located in a "Not Normally Permissible" area as classified in the Galway County Development Plan 2022-28, indicating a potential planning oversight. The appellants submit that this classification is due to factors such as environmental sensitivity, proximity to residential areas, and impact on natural and cultural heritage. They argue that proposing a wind farm here contravenes planning principles and raises concerns about the site selection process and alternative site considerations. The appellants assert that An Bord Pleanála must scrutinise the rationale, considering significant impacts on the environment and community, including environmental sensitivity, residential proximity, and planning policy conflicts. They contend that selecting this site sets a concerning precedent, potentially leading to unsuitable developments.
- 6.3.2. The appellants note that the eastern section of the site, designated as "not normally permissible" and having a special landscape sensitivity rating, was approved by Galway County Council for an increase in turbine height. They point out that wind farm policy objective 18 prohibits wind farms in special landscape sensitivity areas. The appellants highlight that these guidelines were adhered to for the Tullaghnore wind farm near Moon Cross (PD/2360051), demonstrating inconsistency in Galway County Council's adherence to best practice guidelines. They further argue that the turbines in the eastern section would have the most impact on the communities of Knockranny, Old Town, and Pillagh.
- 6.3.3. The applicant contests these grounds of appeal, stating that the appropriateness of the site for wind farm development remains valid despite the appeals. The applicant notes that since the 2016 grant of planning permission for the Knockranny Wind Farm, the new Galway County Development Plan 2022-2028 and the Local Authority Renewable Energy Strategy (LARES) 2022 have been adopted. They acknowledge changes in the 2022 LARES, which now place two turbines in a 'Not Normally

Permissible' area and two others straddling the border between 'Strategic Areas' and 'Not Normally Permissible' areas, whereas the site was previously fully within 'Strategic Areas.'

- 6.3.4. The applicant emphasises that this designation does not preclude development. They contend, based on site history, policy review, and the Landscape and Visual Impact Assessment, that these changes are not material issues for the proposed development. They reference the Council's Senior Executive Planner's Report, which supports improved turbine design and maintains that the principle of wind energy development at this location should not be revisited.
- 6.3.5. The applicant notes that Section 4 of LARES aims to ensure mapping consistency with planning decisions, yet existing planning permission appears to have been overlooked in the boundary redrawing, which they consider an oversight. The site remains largely within a 'Strategic Area' for wind in LARES 2022, and planning permission for the Cnoc Raithni (Knockranny) Wind Farm already exists, covering the turbines now outside the 'Strategic Area.'
- 6.3.6. The applicant stresses that the landscape character of all 11 permitted wind turbines is homogenous, as reviewed by the project landscape architects and Macroworks in Chapter 4 of the EIAR and supported by the Council's Senior Executive Planner's Report. They refer to Section 19 of LARES, stating that wind energy proposals should address constraints detailed in Sections 5 and 9, even if not in 'Strategic Areas' or 'Acceptable in Principle' areas, which they have discussed in the statement by Macroworks.
- 6.3.7. The applicant emphasises Section 5 of LARES, identifying renewable energy as crucial for reducing carbon emissions, aligning with the proposed development's aim to increase energy output and reduce reliance on fossil fuels. They highlight Section 9 of LARES, noting rapid development in onshore wind technology and the need for proposals to meet national wind energy guidelines, which the proposed development adheres to, demonstrating no adverse impacts.
- 6.3.8. The applicant contests references to the Galway County Council decision on a proposed wind farm at Tullaghmore, arguing that the cases differ significantly. It is submitted that the proposed development alters a permitted development largely within a 'Strategic' area, unlike the new 2023 Tullaghmore Wind Farm application in a

'Not Normally Permissible' area. They underscore that existing planning permission for the Cnoc Raithni (Knockranny) Wind Farm, including turbines now outside the 'Strategic Area,' persists regardless of the proposed development considerations.

- 6.3.9. The Planning Authority, in its assessment, considered that the proposed development involves modifications to an already permitted wind farm at Cnoc Raithni/Knockranny. The changes include increasing turbine heights from 130.5m/140.5m to 150m, which will enhance the power capacity from 33MW to 46-49MW for the National Grid. These alterations also involve new underground cabling, widening an access road, extending the substation (additional 75sqm floor area), and additional tree felling (2.45 hectares).
- 6.3.10. The Planning Authority notes that the site predominantly lies within a Strategic Area for Wind Development, though the eastern portion is designated as "Not Normally Permissible." They emphasise that the development aligns with the Local Authority Renewable Energy Strategy (LARES) and various planning policies aiming to support renewable energy generation and transition to a low-carbon economy.
- 6.3.11. The Planning Authority concluded that the proposal does not revisit the principle of wind energy development but seeks to improve turbine design and power output. Given the existing permission for 11 turbines, the modifications are seen as acceptable, subject to standard planning considerations and compliance with relevant objectives. The Planning Authority affirms that the site has undergone thorough legal and development processes and that the increased turbine height is supported by national, regional, and local planning policies.
- 6.3.12. Having reviewed the submissions from the third-party appellants, the applicant's response, and the Planning Authority's assessment, it is my that several key factors must be considered, including the planning history and permitted development on the site, the nature of the proposed development, Development Plan policy and designation compliance.
- 6.3.13. As stated in the statutory notices, the application seeks permission for alterations to the wind farm permitted under PA Ref. 13/829 and ABP Ref 07.243094. The proposed changes include increasing the height of 11 turbines to an overall ground-to-blade tip height of 150 meters, which represents an increase of 19.5 meters and 9.5 meters from the previously permitted heights of 130.5 meters and 140.5 meters. The alterations also involve rotor blade lengths of 68 or 69 meters and hub heights of 81

or 82 meters. This includes an increase in turbine foundations and the omission of a previously permitted on-site 110kV substation and underground cabling. Additionally, the proposal involves the provision of underground electrical (33kV) and communications cabling to connect the turbines to the Ardderroo wind farm substation, including the construction of a new cable service track and the widening of an existing access road. The Ardderroo substation will be extended within its current compound to include a control building extension, a new 110kV transformer, and other electrical apparatus. The development also encompasses all associated site and ancillary works, including site drainage and tree felling.

- 6.3.14. The application seeks an operational period and planning permission duration to align with the existing permission (ABP Ref 07.243094). The development permitted under P.A. Ref. 13/829 / ABP Ref. 07.243094 was granted permission on appeal on the 19th of February 2016. A ten-year planning permission was granted (Condition No. 3), and the planning permission is valid for 25 years from the date of commissioning of the wind farm (Condition No. 4).
- 6.3.15. In assessing the principle of the proposed development, the planning history of the site is crucial. The existing permission, as granted by An Bord Pleanála under ABP Ref 07.243094, establishes the principle of wind energy development at this location. Notwithstanding the proposed design changes, the primary focus of the amendments is to enhance the efficiency and capacity of the permitted wind farm, aligning with national and local renewable energy policies aimed at increasing renewable energy output and reducing carbon emissions. Nevertheless, Development Plan policy and designation compliance are also significant considerations. Having reviewed the Site Layout Plan, Map 15 of the Local Authority Renewable Energy Strategy, and Galway County Council GIS mapping portal, I note that Turbine Nos. 8 and 13 are situated on lands designated as "Not Normally Permissible". Additionally, Turbine Nos. 1, 2, and 5 are located on lands that straddle areas designated as both "Not Normally Permissible" and "Strategic Areas".
- 6.3.16. Policy Objective 18 of the County Galway Local Authority Renewable Energy Strategy (LARES) specifies that 'Wind energy development proposals in areas that are identified as 'Not Normally Permissible' for wind energy development will be considered in accordance with the LARES and the proper planning and sustainable

development of the area. Table 9 of the LARES defines areas 'Not Open to Consideration' as 'Areas where Wind Energy Projects, would be likely to conflict with policies of the council to protect landscape, water, ecological resources and residential amenity. Such areas may also include areas and species protected by the Habitats Directive' and that these areas were excluded 'due to Natura sites, Iconic and Special Landscape Sensitivity, Geological Heritage sites and Settlements'.

- 6.3.17. Notwithstanding the change in the designation of the lands under the new Galway County Development Plan, it is my view that the proposed development is seeking permission for amendments to existing permission ABP Ref 07.243094 and, therefore, would not materially contravene the Galway County Development Plan and the Wind Energy Deployment Zones in the LARES. The nature, location, and principle of the permitted turbines were addressed fully by the Board under ABP Ref 07.243094.
- 6.3.18. I consider that the primary focus of the proposed amendments is to enhance the efficiency and capacity of the permitted wind farm. This aligns with national, regional and local renewable energy policies aimed at increasing renewable energy output and reducing carbon emissions. The proposed increase in the height of the permitted turbines, from 130.5 meters and 140.5 meters to 150 meters, will be assessed separately in the Environmental Assessment under the heading Landscape and Visual Impact.
- 6.3.19. I conclude, therefore, that the proposed amendments to the permitted development would be acceptable in principle at this location. The proposed changes do not fundamentally alter the nature of the already approved project but rather seek to optimise its performance and alignment with current renewable energy goals. Therefore, I recommend that the proposed development should not be refused permission on these grounds of appeal.

### 6.4. **Public Consultation**

6.4.1. An objection was received, expressing concerns that the developer's approach to community consultation for the proposed wind farm project is significantly flawed. The objection highlights that effective consultation, which requires transparent communication, active engagement with local residents, and genuine consideration of their feedback, was not adequately conducted. This has undermined trust between the

developer and the community, leading to feelings of disenfranchisement. Additionally, the lack of comprehensive consultation risks overlooking key concerns and local knowledge crucial for assessing the project's true impact. The refusal of Galway County Council to meet with local residents and the lack of adequate onsite inspection further exacerbate the issue. The objection urges An Bord Pleanála to critically evaluate the consultation process and ensure community concerns are given substantial weight in the decision-making process, upholding the community's right to be involved in decisions affecting their environment and well-being.

- 6.4.2. The Applicant contests these grounds of appeal, as detailed in Section 6.2.1.9 above. In summary, the Applicant asserts that the level of community consultation exceeded the requirements set out in both existing and draft guidelines. They reference the 2006 Wind Energy Development Guidelines and the 2019 Draft Revised Wind Energy Guidelines, which emphasise early and active community engagement. The Applicant highlights extensive pre-application consultations, including door-to-door visits, three public information days in 2013, and continuous updates through various means. They also point to a dedicated Community Liaison Officer who conducted further consultations in November 2022, meeting 104 residents and distributing information packs. Additional updates and a public information session in March 2023 at Killannin Community Centre were conducted, with ongoing communication maintained through a dedicated project website (www.knockrannyinfo.com) launched in November 2022.
- 6.4.3. Volume III Appendix 6-1 of the EIAR sets out the Applicant's consultations with prescribed bodies and stakeholders and details of community consultation, including a public information session and exhibition in March 2023, a dedicated project website (launched in November 2022), details of door-to-door activities undertaken by the Community Liaison Officer, and mailing information updates undertaken in 2022/23.
- 6.4.4. With regard to the issue raised, it is my view that the Applicant has adequately addressed concerns regarding public consultation. Volume III Appendix 6-1 of the EIAR outlines a comprehensive approach to community engagement consistent with the Code of Practice for Wind Energy Development in Ireland (2016). The appointment of a Community Liaison Officer facilitated direct communication with the public, employing various methods such as door-to-door consultations within the vicinity of the proposed development, distribution of informative materials, and the arrangement of follow-up meetings as needed. This engagement was complemented by the

establishment of a dedicated project website (www.knockrannyinfo.com) that provided updates and ensured an accessible platform for public feedback and concerns. The Application Form confirms that a pre-application consultation occurred with the Planning Authority on the 25<sup>th</sup> of January 2023. The Applicant acknowledges that this was mistakenly written as 2013 in the Planning Report submitted.

6.4.5. The Applicant's engagement with the Planning Authority, prescribed bodies, and the consideration of feedback from various stakeholders, including the local community, demonstrates comprehensive public consultation. Furthermore, third-party observers exercised their right to submit observations of and objections to the proposal to the Planning Authority and An Bord Pleanála, and the concerns raised in these submissions and observations to An Bord Pleanála have been thoroughly considered in this assessment. Therefore, I consider that the public was provided with the necessary opportunity to engage in the planning process under the subject application.

### 6.5. Procedural issues

- 6.5.1. An objection received raised concerns regarding the applicant's submission of the Environmental Impact Assessment Report (EIAR). The objector contends that the EIAR, which should have been provided in an electronically searchable format, was instead split into five scanned documents that were not searchable. This non-compliance with the Act significantly hindered the preparation of the appellant's submission. Furthermore, large sections of the EIAR appear to be missing. The objector asserts that this oversight by the local authority should have rendered the original application invalid, emphasising the statutory requirement for all planning applications to be valid to prevent unnecessary delays and additional expenses.
- 6.5.2. The applicant responds to this, stating that a digital, searchable copy of the entire application, including the EIAR, was provided to the Planning Authority. Additionally, a review of the Council's scanned online planning file confirms that all application documents are present. The applicant asserts that the appellant's claim of missing sections is unsubstantiated.
- 6.5.3. Having reviewed the Planning Authority's website and electronic planning database therein, I observe that all documentation associated with the application submitted to the Planning Authority is available to view online. While the EIAR is divided into

separate parts and the text is not keyword searchable, the availability of these documents in electronic format complies with Section 38 of the Planning and Development Act, 2000 (as amended). The EIAR and related documents can be accessed on An Bord Pleanála's website, where the text is fully searchable and can be copied easily. Therefore, I am satisfied that the legislative requirements have been met and the appellant's concerns regarding the EIAR format do not warrant invalidating the original application. In any event, the validation of a planning application is a function of the Planning Authority and outside the remit of An Bord Pleanála.

### 6.6. Landowner Consent

- 6.6.1. An appellant objects to the proposed development on the grounds that references to a tertiary road may indicate the involvement of a public road. If public roads are involved, such as cables running underneath, Section 22(2)(g)(ii) of the Planning and Development Act (sic) applies. This section requires written confirmation from a statutory undertaker for proposed developments on a public road. The appellant asserts that if such confirmation was required and not submitted, it invalidates the consent. Additionally, the application requires the construction of at least one culvert and physical alterations to riverbanks, which necessitate Section 50 consent from the Office of Public Works (OPW). The OPW's Section 50 consent information booklet highlights potential adverse hydraulic effects from such constructions, impacting local flood risk management plans. There is no evidence of the OPW's response as a listed consultee, and clarification is requested on whether there was a reply. Changes in the revised NIS indicate additional culverts that may require further consultation with the OPW.
- 6.6.2. The Applicant contests this, stating that letters of consent from Coillte, Ardderroo Cooperative Society Limited, and Rockgrid Limited are included in the application, authorising the applicant to lay cables under and along forestry and other private roads. The applicant further submits that Section 50 consents are typically obtained post-planning and are addressed in Section 4.1.6.1.10 of the Construction and Environmental Management Plan (Appendix 2-1 of the EIAR).
- 6.6.3. With regard to this issue, Section 5.13 of the Development Management Guidelines (2007) refers to 'Issues relating to title to land' and states that the planning system is

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not designed as a mechanism for resolving disputes about title to or rights over land and that these are ultimately matters for resolution in the Courts. The Guidelines advise that where there is doubt in relation to the legal title of the applicant, the Planning Authority may decide to grant permission; however, a grant of permission is the subject of Section 34(13) of the Planning and Development Act 2000 (as amended). Section 34(13) of the Planning and Development Act 2000 (as amended) states that 'a person is not entitled solely by reason of permission to carry out any development.'

6.6.4. Section 22(2)(g) of the Planning and Development Regulations, 2001 (as amended), requires that where the applicant is not the legal owner of the land or structure concerned, the written consent of the owner to make the application shall be submitted with the application. Having reviewed the letters of landowner consent and associated maps submitted with the application, I am satisfied that the applicant has demonstrated authorisation to lay cables under and along forestry and private roads as per the consents from Coillte, Ardderroo Co-operative Society Limited, Rockgrid Limited, and others. Section 4.1.6.1.10 of the Construction and Environmental Management Plan (Appendix 2-1 of the EIAR) addresses the process for obtaining necessary consents, such as Section 50 consents for the construction of culverts and riverbank alterations. Therefore, it is my view that the applicant's compliance with the requirements of Section 22(2)(g) of the Regulations is adequate, and the approach to obtaining Section 50 consent is consistent with standard practice as outlined in the EIAR.

# 6.7. Duration of Permission and Operational Period

6.7.1. The proposed development seeks permission for amendments to the permitted Cnoc Raithni (Knockranny) Wind Farm, originally granted under Galway County Council Planning Ref. No. 13/829 and ABP Ref. 07.243094. The amendments include modifications to turbine dimensions, the omission of a previously approved substation, and other associated works. Under the current application, the applicant has sought permission for the development to align with the duration of the existing permission, which includes a ten-year period for construction from the date of the order and a 25-year operational period from the date of commissioning of the wind farm.

- 6.7.2. In addressing the issue of duration and operation of permissions for amendments to existing planning permissions, the High Court has provided clarity through case law. Specifically, in the South-West Regional Shopping Centre Promotion Association Ltd v An Bord Pleanála ([2016] IEHC 84, [2016] 2 I.R. 481), it was confirmed that there is an implied power to amend planning permissions and that the duration of an amending permission may be tied to the original parent permission. This principle ensures that amendments do not extend the duration of the original permission unless explicitly stated.
- 6.7.3. In the case of amendments to the Knocknamona Windfarm (ABP-309412-21), previously authorised under An Bord Pleanála Ref No. PL93.244006, the Board imposed the following conditions:
  - Condition No. 3: "The period during which the development hereby permitted is constructed shall be 10 years from the date of this order. Reason: In the interests of clarity."
  - Condition No. 2: "All conditions attached to An Bord Pleanala Ref. PL93.244006 shall be complied with in the development except as may otherwise be required in order to comply with the following conditions. Reason: In the interests of clarity."
- 6.7.4. This case was discussed in the Moya Power judicial review ([2024] IEHC 247), where the court concluded that the duration of the amendment permission refers only to the amendments themselves, while the original elements of the wind farm remain subject to the original permission's timeframe. The court also referenced the South-West Regional Shopping Centre case, where it was established that extending the duration of an existing planning permission by granting an amendment is not invalid or impermissible in principle.
- 6.7.5. In view of the legal precedents and the conditions imposed in similar cases, it is my view that the duration of the permission for the proposed amendments should be explicitly defined. I consider that imposing a ten-year period for the construction of the amendments, starting from the date of the new order in the event of a grant of permission, is appropriate to ensure clarity and compliance with existing legal principles. Additionally, all conditions attached to the original permission should continue to apply except where modified by the new conditions. Therefore, I

recommend that, in the event of a grant of permission, conditions similar to those imposed in ABP-309412-21 be applied, specifically:

- A condition stipulating that the period during which the development hereby permitted is constructed shall be ten years from the date of the order.
- A condition requiring compliance with all conditions attached to the original permission, except as otherwise required to comply with the new conditions.
- 6.7.6. This would ensure consistency with established legal principles and provide clear guidance for the development and its operational period.

# 7.0 Environmental Impact Assessment

# 7.1. Statutory Provisions

- 7.1.1. The proposed development involves amendments to the Cnoc Raithni (Knockranny) Wind Farm (as permitted under PA Ref. 13/829 and ABP Ref 07.243094), including 11 wind turbines with an increased height of 150m (previously 130.5m & 140.5m), a rotor blade length of 68m or 69m, and a hub height of 81m or 82m. It also includes the provision of underground electrical (33kV) and communications cabling connecting the 11 turbines to the Ardderroo wind farm substation, along with a new cable service track, road widening, and an extension of the Ardderroo substation. Associated site development and ancillary works, such as site drainage and tree felling, are also part of the project.
- 7.1.2. According to Section 2.3.2 of the EIAR, the 11 proposed wind turbines have an estimated export capacity of 13.86 MW to 16.5 MW, with an annual output of approximately 143 to 151 GWh. Schedule 5, Part 2 of the Planning and Development Regulations 2001 (as amended), Class 3(i), requires an EIA for wind farms with more than 5 turbines or a total output greater than 5 megawatts. Therefore, the proposed development necessitates an EIA.

# 7.2. EIA Structure

7.2.1. This section of the report comprises the environmental impact assessment of the proposed development in accordance with Planning and Development Act 2000 (as

amended) and the associated Regulations, which incorporate the European directives on environmental impact assessment (Directive 2011/92/EU as amended by 2014/52/EU). Section 171 of the Planning and Development Act, 2000 (as amended) defines EIA as:

- a) consisting of the preparation of an EIAR by the applicant, the carrying out of consultations, the examination of the EIAR and relevant supplementary information by the Board, the reasoned conclusions of the Board and the integration of the reasoned conclusion into the decision of the Board, and
- b) includes an examination, analysis and evaluation, by the Board, that identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on defined environmental parameters and the interaction of these factors, and which includes significant effects arising from the vulnerability of the project to risks of major accidents and/or disasters.
- 7.2.2. Article 94 of the Planning and Development Regulations, 2001 and associated Schedule 6 set out requirements on the contents of an EIAR.
- 7.2.3. This EIA section of the report is therefore divided into two sections. The first section assesses compliance with the requirements of Article 94 and Schedule 6 of the Regulations. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant effects of it on the following defined environmental parameters, having regard to the EIAR and relevant supplementary information:
  - population and human health,
  - biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive,
  - land, soil, water, air and climate,
  - material assets, cultural heritage and the landscape,
  - the interaction between the above factors, and
  - the vulnerability of the proposed development to risks of major accidents and/or disasters.

7.2.4. It also provides a reasoned conclusion and allows for integration of the reasoned conclusions into the Board's decision, should they agree with the recommendation made.

### 7.3. Issues Raised in Respect of EIA

- 7.3.1. Issues raised in respect of EIA by parties to the appeal are detailed in Section 5.0 above and summarised as follows:
  - **Visual Impact**: The increased turbine height to 150 meters would significantly impact the visual landscape, potentially affecting the area's natural beauty, local tourism, and residents' well-being.
  - **Shadow Flicker**: Taller turbines will cause shadow flicker, posing health risks and discomfort to nearby residents, with concerns about the effectiveness of proposed mitigation strategies.
  - Noise Pollution: Increased noise levels from taller turbines pose significant health risks, with concerns about outdated noise assessments and the need for updated studies to reflect current conditions.
  - Health Impacts: Concerns about stress, sleep disturbance, and quality of life impacts from noise pollution and shadow flicker, particularly for vulnerable groups, with a call for a thorough and updated health impact analysis.
  - **Biodiversity**: Significant risks to local wildlife and biodiversity are noted, with inadequate assessment and mitigation measures, and concerns about cumulative impacts on sensitive ecological areas.
  - Study Area Considerations: The study area is considered insufficiently expansive, failing to capture the full impact of the development and its cumulative effects with other wind farms.
  - **Peat Instability**: Potential risks of peat slippage, with calls for an independent review of the applicant's assessments and consideration of climate change impacts.
  - Section 50 Consent Required: The need for consent from the Office of Public Works for construction activities affecting watercourses, with concerns about hydraulic impacts and flood risk management.

 Other Issues: The Defence Forces request specific obstacle lighting, which may impact the landscape and local fauna. The lighting should be visible to Night Vision equipment and emit light in the near Infra-Red range. There are concerns about the EIAR's completeness, with missing chapters and data, affecting the assessment of species surveys, noise, and vibration. Additionally, the impact of lighting on nocturnal wildlife and the local community requires thorough evaluation.

# 7.4. Compliance with the requirements of Article 94 and Schedule 6 of the Regulations 2001

7.4.1. I assess below compliance with the requirements of Article 94 and Schedule 6 of the Regulations.

Article 94 (a) Information to be contained in an EIAR (Schedule 6, paragraph 1)		
A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development (including the additional information referred to under section 94(b).	<ul> <li>The description of the proposed development is addressed in Chapter 2 of the EIAR document. It provides a comprehensive overview, including details about the location, design, size, use of natural resources, and the production of emissions and waste.</li> <li>Key Details Included:</li> <li>Site and Design: <ul> <li>The proposed development involves alterations to the Cnoc Raithni (Knockranny) Wind Farm, comprising 11 wind turbines with an increased height from 130.5m/140.5m to 150m, a rotor blade length of 68m or 69m, and a hub height of 81m or 82m.</li> <li>It includes the omission of the permitted on-site 110kV substation and underground cabling, provision of underground electrical and communications cabling connecting the turbines to the Ardderroo wind farm substation, and associated infrastructure works such as road widening and a new cable service track.</li> </ul> </li> <li>Use of Natural Resources: <ul> <li>The construction phase will require significant materials, including approximately 1,350m<sup>3</sup> of structural fill material for turbine foundations and 2 900m<sup>3</sup> for road ungrading (Sections)</li> </ul> </li> </ul>	

5.5.2 and 7.6.2.1.). Additional importation and excavation details are provided for various
construction activities.
Emissions and Waste:
<ul> <li>The EIAR outlines the expected residues, emissions, and waste during both the</li> </ul>
construction and operational phases. This includes dust emissions, potential for noise, and
waste management plans. The Dust Management Plan and other mitigation measures are
detailed to minimise impacts on air quality and human health
Adequacy for Decision Making:
The description in the EIAR is comprehensive and includes all necessary details to enable
informed decision-making. It provides a clear picture of the project's scale, design, and
potential environmental impacts, ensuring that all relevant aspects are considered. This aligns
with the requirements of the EIA Directive and provides a solid basis for evaluating the
environmental impact of the proposed development.

A description of the likely	The description of the likely significant effects on the environment of the proposed development	
significant effects on the	is detailed across various chapters of the EIAR document, with Chapter 15 providing a	
environment of the	summary of the significant interactions and effects. The document covers several key aspects,	
proposed development	including population and human health, biodiversity, land, soil, water, air, and climate, as well	
(including the additional	as material assets, cultural heritage, and the landscape.	
information referred to	Key Details Included:	
under section 94(b).	Population and Human Health:	
	<ul> <li>Noise and Vibration: The potential for increased noise levels during construction and</li> </ul>	
	operation phases, with assessments indicating that noise impacts are within acceptable	
	limits with mitigation measures.	
	<ul> <li>Shadow Flicker: Analysis of the shadow flicker effects on nearby residences, with</li> </ul>	
	proposed mitigation measures to minimise impacts.	
	Biodiversity:	
	Habitat Loss and Disturbance: The removal of vegetation and its impact on local wildlife,	
	including birds and mammals. Specific species assessments are included to evaluate the	
	potential impact on protected species and habitats.	
	<ul> <li>Watercourse Impact: Potential impacts on watercourses from construction activities,</li> </ul>	
	including sedimentation and changes in hydrology, with mitigation measures proposed to	
	protect aquatic habitats.	
	Land, Soil, Water, Air, and Climate:	

•	Soil and Geology: Assessment of soil removal, compaction, and potential contamination
	from construction activities.
Ŀ.	Water Quality and Hydrology: Impacts on surface and groundwater from construction
	runoff, with measures to prevent contamination and manage water flow.
Ŀ.	Air Quality: Dust and emissions from construction activities, with mitigation strategies to
	minimize air quality impacts.
M	aterial Assets, Cultural Heritage, and the Landscape:
Ŀ.	Visual Impact: Analysis of the visual changes to the landscape due to the increased turbine
	height and construction activities.
Ŀ.	Cultural Heritage: Potential impacts on archaeological sites and heritage features, with
	assessments ensuring minimal disturbance to cultural assets.
In	teraction Between Factors:
•	Cumulative Effects: The combined impact of this development with other existing or
	proposed projects in the vicinity, including cumulative noise, visual, and ecological impacts.
$ \cdot $	Mitigation Measures: Detailed strategies to mitigate adverse effects across all
	environmental factors, ensuring that the proposed measures are robust and effective.
A	dequacy of the Description:
Т	he descriptions provided in the technical chapters of the EIAR are thorough and detailed,
C	overing the various potential significant effects of the proposed development on the
e	nvironment. The document includes robust assessments, proposed mitigation measures, and

residual impacts, enabling informed decision-making. The inclusion of comprehensive data,
analysis, and mitigation strategies ensures that the EIAR meets the requirements for a
thorough environmental impact assessment.

# A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b).

# **Description of Features and Mitigation Measures**

The description of the features of the proposed development and the measures to avoid, prevent, reduce, or offset likely significant adverse effects on the environment are extensively addressed in the EIAR, specifically in Chapter 16, which provides a comprehensive summary of mitigation measures.

# Key Details Included:

# Features of the Proposed Development:

- The development includes 11 wind turbines with increased height, underground electrical and communications cabling, and infrastructure such as the extension of the substation. The project's site, design, and size details are thoroughly covered in Chapter 2 of the EIAR.
   Mitigation Measures:
- Landscape and Visual: Design stage measures include maintaining the number of turbines and their layout while adjusting heights to balance visual impact. Construction stage measures aim to minimise physical land disturbance.
- Hydrology and Water Quality: Measures to prevent sediment and pollutants from entering watercourses, such as locating construction compounds away from watercourses and implementing drainage control measures.
- Noise and Vibration: Noise impact assessments and the implementation of mitigation strategies to minimise noise during construction and operation.

<ul> <li>Air Quality: Dust management plans and measures to reduce emissions during</li> </ul>
construction, including proper maintenance of machinery and adherence to best practices.
<ul> <li>Biodiversity: Specific measures to protect wildlife and habitats during construction and</li> </ul>
operation phases, as outlined in the CEMP (Construction Environmental Management
Plan) and EcIA (Ecological Impact Assessment).
<ul> <li>Cultural Heritage: Measures to protect archaeological and cultural heritage features,</li> </ul>
including monitoring and adjusting construction methods to prevent damage.
<ul> <li>Peat Stability: Measures to prevent peat instability, including detailed geotechnical</li> </ul>
assessments and adherence to best practices during construction.
Adequacy for Decision Making:
The EIAR includes comprehensive mitigation strategies designed to avoid, reduce, or offset
significant adverse effects. These measures are integrated into various chapters and
appendices, such as the CEMP, EcIA, and Ecological Restoration and Enhancement
Management Plan. The mitigation measures described are thorough and robust, addressing
potential impacts on the environment effectively.
Mitigation Measures Summary:
<ul> <li>CEMP (Construction Environmental Management Plan): Encompasses all mitigation</li> </ul>
measures for construction, including sediment control, pollution prevention, and site
management practices.

	<ul> <li>EcIA (Ecological Impact Assessment): Details measures to protect biodiversity, such as habitat preservation and species-specific protection strategies.</li> <li>Ecological Restoration and Enhancement Management Plan: Focuses on long-term habitat conservation and enhancement measures.</li> <li>The mitigation measures provided in the EIAR are designed to offset significant adverse effects on the environment, ensuring that the project complies with regulatory requirements and minimises its environmental footprint. The detailed and methodical approach in the EIAR supports robust decision-making regarding the environmental impacts of the proposed wind farm development.</li> </ul>
A description of the	Description of Reasonable Alternatives
reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific	The EIAR addresses the description of reasonable alternatives considered for the proposed development in <b>Chapter 3 - Alternatives Considered</b> . This chapter details the various alternatives studied and provides the rationale for the chosen option, taking into account the environmental impacts. <b>Key Sections:</b>

characteristics, and an	1. Introduction (Section 3.1):
indication of the main	<ul> <li>This section explains the legal and regulatory framework requiring the description of</li> </ul>
reasons for the option	reasonable alternatives, as stipulated by the EIA Directive and the Planning and
chosen, taking into account	Development Regulations.
the effects of the proposed	2. Do-Nothing Alternative (Section 3.2):
development on the	Describes the implications of not proceeding with the proposed development. It
environment (including the	highlights the loss of opportunity to increase the generating potential of the site and
additional information	the inefficiency associated with not utilising the site's renewable energy potential.
referred to under section	3 Alternative Locations (Section 3.3):
94(b).	
	Explores the feasibility of locating the wind farm at a different site. It concludes that the
	subject lands are optimal due to existing planning permissions, the site's strategic
	designation for wind energy, and the environmental assessments already conducted.
	4. Alternative Layouts and Design (Section 3.4):
	<ul> <li>Discusses different design configurations and technological alternatives. It explains that</li> </ul>
	maintaining the same number of turbines and their layout, while increasing turbine heights,
	minimises additional environmental impacts while optimizing energy production.
	5. Alternative Processes for Development (Section 3.4.3):
	<ul> <li>Considers the processes involved in the construction and operational phases, ensuring</li> </ul>
	minimal environmental disruption and adherence to best practices.
	6 Alternative Mitigation (Section 3.5)

	<ul> <li>Refers to additional or modified mitigation measures in the individual chapters of the EIAR</li> </ul>
	considered to reduce environmental impacts further.
	7. Conclusion (Section 3.6):
	<ul> <li>Summarises the reasons for selecting the proposed development option, emphasising the</li> </ul>
	balance between maximising renewable energy generation and minimising environmental
	impacts.
	Considerations and Adequacy:
	The alternatives considered include the do-nothing scenario, alternative locations, layouts, and
	designs, as well as alternative construction and operational processes. Each alternative is
	evaluated based on its environmental impacts, with the chosen option demonstrating the best
	balance between environmental protection and energy production efficiency. The description
	and evaluation of these alternatives are detailed enough to support robust decision-making.
Article 94(b) Additional inform	ation, relevant to the specific characteristics of the development and to the environmental
features likely to be affected (	Schedule 6, Paragraph 2).
A description of the baseline	The EIAR provides a comprehensive description of the baseline environment and the likely
environment and likely	evolution in the absence of the proposed development in each of the technical chapters. Here
evolution in the absence of	are examples of specific sections that address this:
the development.	Chapter 8 - Hydrology and Hydrogeology:

•	Section 8.3 Existing Environment: This section describes the current hydrological and
	hydrogeological conditions, including water quality and drainage patterns.
•	Section 8.4 Potential Impacts: Describes how the baseline environment would evolve
	without the development.
С	hapter 9 - Biodiversity:
Ŀ	Section 9.3 Existing Environment: Details the current biodiversity, including flora and
	fauna, and protected species and habitats.
Ŀ.,	Section 9.4 Do Nothing Scenario: Describes how if the proposed development were not to
	proceed the already permitted 11-turbine layout will proceed under the terms of the existing
	permission.
С	hapter 12 - Noise and Vibration:
Ŀ	Section 12.3 Baseline Conditions: Provides an assessment of existing noise levels in the
	project area.
Ŀ	Section 12.4 Potential Impacts: Discusses the likely changes in noise levels over time if
	the project is not implemented.
C	hapter 13 - Air Quality and Climate:
•	Section 13.3 Baseline Conditions: Details the current air quality and climatic conditions in
	the project area.
•	Section 13.4.1 Do Nothing Scenario: Examines the likely significant impacts that would
	arise under the permitted development.

	Adequacy for Decision Making The descriptions provided in these chapters are thorough and include all relevant aspects of the baseline environment, such as air quality, noise, biodiversity, hydrology, and climate. This baseline assessment ensures that the likely significant effects of the proposed development can be adequately evaluated, supporting robust and informed decision-making.
A description of the forecasting methods or evidence used to identify	The EIAR provides detailed descriptions of the forecasting methods and evidence used to identify and assess significant effects on the environment in various chapters. These sections also highlight any difficulties encountered and the main uncertainties involved.
and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved	<ul> <li>Key Sections:</li> <li>Chapter 8 - Hydrology and Hydrogeology:</li> <li>Forecasting Methods: This chapter uses hydrological modelling and empirical data to predict changes in water quality and flow patterns. Techniques include GIS mapping and hydrological simulations.</li> <li>Difficulties and Uncertainties: Challenges include variability in rainfall patterns and potential data gaps in historical hydrological records.</li> <li>Chapter 9 - Biodiversity:</li> <li>Forecasting Methods: Methods include habitat surveys, species-specific studies, and ecological modelling. The chapter uses standardised protocols to assess impacts on flora</li> </ul>

Difficulties and Uncertainties: Difficulties include limited baseline data for certain species
and the inherent unpredictability of ecological responses to environmental changes.
Chapter 12 - Noise and Vibration:
<ul> <li>Forecasting Methods: Acoustic modelling and field measurements are used to predict</li> </ul>
noise levels and vibration impacts. The chapter references industry standards for noise
impact assessments.
• Difficulties and Uncertainties: Challenges include accounting for ambient noise variability
and potential changes in noise propagation due to weather conditions.
Chapter 13 - Air Quality and Climate:
<ul> <li>Forecasting Methods: Air dispersion models and climate projections are employed to</li> </ul>
assess air quality impacts and potential climate change effects.
Difficulties and Uncertainties: Uncertainties arise from climate model projections and the
influence of local meteorological conditions on air quality.
Adequacy of Forecasting Methods:
The forecasting methods used in the EIAR are generally adequate for describing the likely
significant effects on the environment. Each technical chapter applies appropriate scientific
methods and models relevant to the specific environmental aspect being assessed. While
some challenges and data gaps are noted, the overall methodology is robust and supports
informed decision-making regarding the proposed development's environmental effects.

A description of the	The EIAR addresses the vulnerability to risks of major accidents and disasters, including the
expected significant adverse	expected significant adverse effects on the environment, within several sections of the
effects on the environment	document. Key points and where they are discussed include the following:
of the proposed	Chapter 2 - Description of the Proposed Development:
development deriving from	This chapter provides an overview of the project's design and operational phases, including risk
its vulnerability to risks of	management strategies to mitigate potential accidents and disasters, e.g. the CEMP (Appendix
major accidents and/or	2.1).
disasters which are relevant	Chapter 7
to it.	<ul> <li>Section 7.6.2.1.Geology: examines potential localised accidental spillages of fuel or chemicals on the site which could contaminate underlying soils</li> </ul>
	Chapter 9 - Biodiversity:
	<ul> <li>Section 9.5 Mitigation Measures and Monitoring: Discusses measures to protect biodiversity in the event of accidents such as chemical spills or fires, which could impact local flora and fauna.</li> </ul>
	Chapter 13 - Air Quality and Climate:
	<ul> <li>Section 13.7.4 Climate - Operational Phase: Examines the potential impact of climate- related disasters, such as extreme weather events, on air quality and overall project stability.</li> <li>Specific Considerations and Mitigation Measures: Risk Assessment:</li> </ul>

	The EIAR includes risk assessments that identify potential accidents and disasters relevant to
	the proposed development. This includes natural disasters (e.g., extreme weather) and human-
	induced incidents (e.g., chemical spills).
	Emergency Response Plans:
	<ul> <li>Detailed in the CEMP (Construction Environmental Management Plan) and operational</li> </ul>
	management plans, these include specific procedures for evacuation, containment of spills,
	and communication with local emergency services.
	The EIAR generally provides an adequate description of the expected significant adverse
	effects on the environment due to the project's vulnerability to major accidents and disasters. It
	outlines comprehensive risk management and mitigation strategies designed to minimise such
	impacts. However, any identified gaps or areas needing further detail should be addressed to
	ensure a thorough risk assessment and response framework.
Article 94 (c) A summary of	The EIAR includes in Vol.1 a non-technical summary of the information required by Article 94
the information in non-	(c). This summary provides a concise, comprehensive description of the project, its
technical language.	environment, the effects of the project on the environment, the proposed mitigation measures,
	and the proposed monitoring arrangements.

Article 94 (d) Sources used	The EIAR does provide the sources used for the description and the assessments in the report,
for the description and the	meeting the requirements of Article 94 (d). These sources are identified and appear to be
assessments used in the	adequate. Here are the key points and references:
report	General Methodology and Guidelines:
	The EIAR is prepared in accordance with the relevant provisions of the EIA Directive, the
	Planning and Development Acts, and Planning and Development Regulations, conforming to
	EU and Irish guidance on EIAR preparation.
	Specific guidelines referenced include:
	<ul> <li>Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental</li> </ul>
	Impact Assessment (Department of Housing, Local Government and Heritage, August
	2018)
	<ul> <li>Environmental Impact Assessment of Projects: Guidance on the Preparation of the</li> </ul>
	Environmental Impact Assessment Report (European Commission 2022)
	<ul> <li>EPA 2022 Guidelines on the Information to be Contained in Environmental Impact</li> </ul>
	Assessment Reports .
	Specific Studies and Data Sources:
	Various chapters of the EIAR reference numerous specific studies and guidelines. For
	example:
	<ul> <li>Ecological Impact Assessment uses guidelines from CIEEM, DoEHLG, European</li> </ul>
	Communities, and others, alongside national databases like NPWS and NBDC.

	<ul> <li>The air quality and climate assessment references documents from EPA, IAQM, TII, and other international standards.</li> <li>Noise and vibration assessments refer to standards like BS 5228, WHO guidelines, and IOA practices.</li> </ul>
	Cited Publications and Guidelines:
	The EIAR includes extensive references to published materials, including national and
	international guidelines, scientific studies, and technical reports. Each chapter lists the
	references used in the assessment at the end.
	Desk Studies and Consultations:
	The report incorporates data from desk studies and consultations with various bodies such as
	Met Eireann, the Irish Aviation Authority, and the National Parks & Wildlife Service.
	These sources are detailed and appropriate for the assessments conducted, ensuring the
	information provided is comprehensive and reliable.
Article 94 (e) A list of the	The EIAR provides a list of the various experts who contributed to the report. A list of the
experts who contributed to	various experts who contributed to the report is set out in Chapter 1, Section 1.9 of the report.
the preparation of the report	Where relevant, the introductory section of each of the chapters also details the individual's
	expertise and qualifications, demonstrating the competence of the person in preparation of the
	individual chapters within the EIAR.

### 7.4.2. Consultations

7.4.3. Issues raised in the appeal regarding public consultation are addressed in Section 6.4 above. The application has been submitted in compliance with the requirements of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended) concerning public notices. Submissions from statutory bodies and third parties have been received and are considered in this report prior to decision-making. Therefore, I am satisfied that appropriate consultations have been carried out and that third parties have had the opportunity to comment on the proposed development in advance of decision-making.

### 7.4.4. Compliance

7.4.5. Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and supplementary information provided by the developer is sufficient to comply with article 94 of the Planning and Development Regulations, 2001 (as amended). Matters of detail are considered in my assessment of likely significant effects, below.

### 7.5. Assessment of Likely Significant Effects

- 7.5.1. This section of the report sets out an assessment of the likely environmental effects of the proposed development under the following headings, as set out Section 171A of the Planning and Development Act 2000, as amended:
  - Population and human health.
  - Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC respectively).
  - Land, soil, water, air and climate.
  - Material assets, cultural heritage and the landscape.
  - The interaction between these factors.
- 7.5.2. In accordance with section 171A of the Act, which defines EIA, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR and submissions received and identifies, describes and assesses

the likely direct and indirect significant effects (including cumulative effects) of the development on these environmental parameters and the interaction of these. Each topic section is therefore structured around the following headings:

- Issues raised in the appeal/application.
- Examination, analysis and evaluation of the EIAR.
- The Assessment: Direct and indirect effects.
- Conclusion: Direct and indirect effects.

### 7.6. Landscape and Visual Impact

#### 7.6.1. Issues Raised

- 7.6.2. I note the third-party appeal submissions received expressing concerns regarding the landscape and visual impact of the proposed amendments to the permitted Knockranny Wind Farm. Key issues include the significant increase in turbine height from 130 meters to 150 meters, which would dominate and intrude upon the natural beauty and scenic views of the region, transforming the character of the landscape and affecting both local and distant views. Concerns also highlight the potential negative effects on residents' sense of place, well-being, and local tourism, which relies on the area's unspoiled natural beauty. Additionally, there are calls for a critical evaluation of visual impact assessments, including montages and simulations, to ensure accuracy and comprehensiveness in depicting the real impact of the turbines.
- 7.6.3. I have taken into consideration the local authority reports concerning the landscape and visual impact of the proposed Knockranny Wind Farm development. Key issues raised include the significant increase in turbine height from 130.5m and 140.5m to 150m, which will potentially alter the visual landscape, particularly from viewpoints like Ross Demense, where the impact is defined as 'Slight.' The Planning Authority's site inspection and review of the Landscape and Visual Impact Assessment (LVIA) and associated photomontages concluded that the increased turbine height would not result in adverse impacts compared to the permitted development. Additionally, the omission of the on-site substation and the integration of the Ardderroo substation extension into the existing landscape are considered improvements. Overall, the Planning Authority finds the proposed development acceptable within the designated

Strategic Area for Wind Development, supported by national, regional, and local planning policies.

### 7.6.4. Assessment Methodology

7.6.5. The EIAR states that the methodology for the Landscape and Visual Impact Assessment (LVIA) follows the guidelines set by the Landscape Institute and the Institute of Environmental Management and Assessment, including a detailed desktop study and fieldwork by qualified Landscape Architects. The EIAR describes the selection of a study area based on a 20km radius for the zone of theoretical visibility (ZTV) due to the 150m turbine height. It details the review of relevant county development plans, scenic route designations, and the recording of landscape elements and characteristics. The EIAR notes the use of comparative photomontages and wireframe models to assess visual impacts from 21 viewpoints. It posits that the assessment includes potential cumulative impacts with other local developments, ensuring a comprehensive evaluation of landscape character, visual receptor sensitivity, and the magnitude of likely impacts. The report indicates that the significance of residual visual impacts is determined using a matrix combining sensitivity and magnitude, ensuring a robust analysis of the proposed development's visual and landscape effects.

### 7.6.6. Baseline Conditions

- 7.6.7. The EIAR describes the landscape context of the proposed site, noting it is located north of summits measuring 134m and 183m, with the surrounding landform trending downhill towards Lough Corrib to the east and upwards to the north and west. The EIAR details that the area features numerous small loughs and connecting waterways, continuous rolling bog to the northeast, and coastal bog and marginal farmland to the southwest. The EIAR notes that the vegetation and land use follow this varied topography, with wet heath, bogland, and conifer plantations predominant.
- 7.6.8. The EIAR indicates that the study area is divided into two sections: the northeast transitions over rolling landform to Lough Corrib, while the southwest features broad undulating hills and coastal landscapes. The EIAR describes the landscape as having a high degree of naturalistic character, with blanket bog, exposed rock, and some commercial conifer plantations. The EIAR posits that the central west of the study

area, particularly around Galway Wind Park, has become synonymous with wind energy developments in recent decades. The EIAR further details that the landscape character is influenced by the presence of wind energy infrastructure, noting that this context is crucial for assessing the visual impact of the proposed development.

- 7.6.9. The EIAR details the context of landscape policy and the designations relevant to the proposed wind farm site. The EIAR states that the site is located within a complex landscape setting, identified as a 'Transitional Marginal Landscape' in the Wind Energy Development Guidelines (2006). The EIAR describes the relevant guidelines for this landscape type, emphasising the need to achieve visual separation from lower ground complexity and minimise visual confusion. It notes that wind energy developments should have irregular spacing and a clustered layout to align with the undulating terrain.
- 7.6.10. The EIAR highlights the Galway County Development Plan (2022-2028), which reclassifies the landscape into regions, types, and character units, applying sensitivity ratings. The site is within the 'West Galway' region, encompassing rugged landscapes of mountains, lakes, and bogs. The EIAR indicates that the site falls under the 'Upland and Bog' landscape type and the 'South Connemara' character unit, which is described as an extensive plateau of blanket bog and forestry. The EIAR notes that the area is classified as having a 'High' landscape sensitivity, meaning it has an elevated sensitivity to change.
- 7.6.11. The EIAR also outlines relevant policies, including Policy Objective LCM 1, which aims to preserve landscape character, and LCM 2 and 3, which requires consideration of landscape sensitivity in development proposals. It references the Local Authority Renewable Energy Strategy (LARES), promoting wind energy developments in suitable locations while balancing landscape preservation with infrastructure needs. The EIAR further notes the presence of scenic routes and protected views within the study area, such as the Galway Clifden and Lough Corrib Scenic Routes, which are considered in the visual impact assessment.
- 7.6.12. The EIAR details the visual baseline for the proposed wind farm development, focusing on areas within the study area that may afford views of the proposed turbines. The EIAR states that a Zone of Theoretical Visibility (ZTV) map was prepared to illustrate potential visibility from different locations within a 20km radius. This ZTV map

is based on terrain data and does not account for screening by vegetation or buildings. The EIAR indicates a comparative ZTV analysis showing a 2.3% increase in the area that will have a view of the proposed turbine blade tips compared to the currently permitted blade tips.

- 7.6.13. The EIAR describes the identification of views of recognised scenic value, primarily indicated within the Galway County Development Plan through scenic views/routes designations. The EIAR notes that all scenic routes and views falling inside the ZTV pattern were investigated during fieldwork to determine the actual visibility of the proposed development. Selected viewpoints were used for the visual impact appraisal, including views from An Charraig Thoir, Ard na Goaithe, Kilbeg Pier, and others relevant to scenic designations.
- 7.6.14. The EIAR details the centres of population and houses within the study area, noting that Galway City, located 10km southeast of the site, is the largest centre of population. Other smaller settlements and service centres include Oughterard, Moycullen, Spiddal, Bearna, and Headford. The EIAR describes clusters of residences along the N59 corridor and the northern boundary of Galway Bay, with fewer houses in the central study area dominated by existing wind farm development.
- 7.6.15. The EIAR also discusses transport routes, highlighting the N59 as the most influential route, running southeast to northwest along Lough Corrib. Other significant routes include the R336, R345, and local roads connecting communities around the lake. The EIAR notes that views from these routes were considered in the visual impact assessment. Tourism, recreational, and heritage features are also considered, with the EIAR stating that the area is popular with both international and domestic visitors. Notable locations include the 'Quiet Man Bridge,' Screebe Fisherman's Hut, and various points along the Wild Atlantic Way. The EIAR details that viewpoints from these features were selected to assess potential visual impacts.
- 7.6.16. The EIAR identifies Viewshed Reference Points (VRPs) as a basis for detailed visual impact assessment, categorised into key views, designated scenic routes and views, local community views, centres of population, major routes, and tourism/recreational/heritage features. The EIAR posits that these VRPs provide a representative sample of likely views towards the proposed development, ensuring a comprehensive visual impact analysis.
- 7.6.17. The EIAR details the cumulative baseline environment, focusing on the potential cumulative visual impacts of the proposed wind farm when considered with existing and approved developments in the area. The EIAR states that cumulative impacts on visual amenity are assessed based on combined visibility and sequential effects, as outlined in the NatureScot Guidelines and the Landscape Institute's LVIA Guidelines.
- 7.6.18. The EIAR describes combined visibility as occurring where the observer can see two or more wind farms from a single viewpoint, either in combination or in succession. Sequential effects occur when the observer moves to another viewpoint to see different developments. The EIAR indicates that cumulative impacts are typically adverse, as they involve adding man-made structures into a landscape already containing similar developments.
- 7.6.19. The EIAR highlights several existing and approved wind farms within the study area, including Ardderroo Wind Farm (25 turbines, adjacent to the site, under construction), Inverin Wind Farm (5 turbines, 10.4km southwest), Galway Wind Park (various phases with a total of 81 turbines in different statuses, 2.6-7.3km from the site), Knockalough Wind Farm (11 turbines, 3km south), and others. The EIAR notes that the spatial extent, scale, layout, and proximity of these developments are critical factors in assessing cumulative impacts.
- 7.6.20. The EIAR posits that visual tension can result from disparate scales or layouts of neighbouring wind farms, especially when seen together or in succession. The report also notes the potential for visual clutter when turbines are viewed in stacked perspective, which can distort the sense of distance and cause confusion. The EIAR details the criteria for assessing the magnitude of cumulative impacts, considering factors such as the proportion of developed to non-developed skyline and the harmony or disharmony between developments.

## 7.6.21. Potential Effects

7.6.22. The EIAR describes the Central Study Area (within 5 kilometres) as having a rapid transition between different landscape characters. The west and south are dominated by wind energy developments and associated infrastructure, while the land cover is primarily upland bog and commercial forestry plantations, with minor waterways and small loughs interspersed. Farmland and rural residences are more common to the east. Access is limited, with only two local roads transecting the area east-west,

terminating at the N59. This road delineates the upland bog/wind energy/forestry landscape from lowland farmland and lakeside areas. The report highlights Ross Lake in the northeast as a key amenity area, surrounded by the largest woodland in the study area. Given the varied landscape and the site's robust character areas, the Central Study Area's landscape sensitivity is considered medium.

- 7.6.23. The report details the Wider Study Area (5-20 kilometres) as featuring dramatic landform elements such as Lough Corrib, Galway Bay, and the Connemara Mountains. The western section is characterised by open vegetation, numerous lakes, and exposed rock, with steep topography defining the eastern border. This region includes a sea lough complex with pockets of development, contributing to its isolated character. The unique Connemara landscape transitions southwards to a more uniform coastal setting near Galway City, leading to high landscape sensitivity. The northeast is dominated by Lough Corrib, offering scenic views and high amenity areas due to its dramatic topography and numerous islands and peninsulas. The eastern part is more developed, with intensive agriculture and a network of small roads. Historic and recreational features cluster around lakes and waterways, particularly in areas like Cong and Ashford Castle. The lake and its surroundings are classified as highly sensitive, with medium sensitivity in more developed pastoral areas.
- 7.6.24. The EIAR describes the potential landscape and visual impacts of the proposed wind farm development in detail. The physical landscape and character of the Site and Central Study Area (<5km) are influenced by the proposed wind turbines and associated infrastructure, whereas for the Wider Study Area, impacts are limited to the influence on landscape character. The EIAR notes that the magnitude of impact is derived from the difference between the Permitted Development and the Proposed Development.
- 7.6.25. During construction, the EIAR indicates that impacts would be very similar to the permitted development but potentially reduced due to revisions connecting to the existing Ardderroo substation rather than constructing a new one. The new grid connection proposal includes an increase in infrastructure at the substation, such as an IPP control building and additional transformer and electrical equipment. There would be minor increases in excavation and land disturbance. The EIAR posits that these changes are very minor in the context of an already modified forestry and wind

farm setting, deeming the magnitude of landscape impacts during construction as Negligible and the quality of the effect as Neutral.

- 7.6.26. For decommissioning, the EIAR details that effects would be similar to those during construction but in reverse and over a shorter duration. These effects are considered Negligible in magnitude and Neutral in quality.
- 7.6.27. During operation, the EIAR states that the greatest potential for landscape impacts arises from the introduction of tall structures with moving components. However, wind turbines are already a characteristic feature of the Central Study Area. The proposed turbines would have slightly larger rotor diameters and increased tip heights, but the number of turbines remains the same. The EIAR indicates that the landscape can accommodate this marginal increase without a sense of the turbines being over-scaled or overbearing. Changes to the grid connection are contained by the terrain and forestry and have little influence on the wider landscape character. The EIAR notes that zoning changes in the Galway County Development Plan do not materially affect the proposed development as the landscape is principally defined by wind energy development. The magnitude of operational stage landscape impact is assessed as Low-negligible and marginally negative, i.e., Neutral-Negative.
- 7.6.28. The significance of construction stage landscape impacts is deemed Imperceptible, while during the operational stage, the impacts are considered Slight-imperceptible due to the marginally increased scale of the proposed turbines relative to their permitted counterparts.
- 7.6.29. The EIAR details the visual impacts of the proposed wind farm development, focusing on the difference in visual impact between the Permitted Development and the current proposal for slightly larger turbines. Visual impacts were assessed at 21 viewpoint locations using photomontages, with the Permitted Development as the baseline condition. The EIAR summarises the individual visual assessments in Table 4.11.
- 7.6.30. The EIAR states that visual impacts from the proposed increase in turbine height and rotor diameter range from Slight to Imperceptible. The maximum turbine height increase is 19.5m for five turbines and 9.5m for the remaining six, which is a relatively small change in the context of 150m tall turbines. The proposed turbines have larger rotor diameters, which is considered in the visual impact assessment.

- 7.6.31. The EIAR notes that the Ardderroo Wind Farm, currently under construction adjacent to the west of the Knockranny turbines, has a permitted rotor diameter of 150m and an overall tip height of 178.5m. The report considers the proposed Knockranny turbines form a more cohesive cumulative arrangement with the adjacent Ardderroo turbines than the permitted Knockranny turbines, whose heights vary. The proposed turbine heights are considered modest by current standards, where turbine tip heights of 180m+ are common.
- 7.6.32. The EIAR describes that, except for the very distant VP20, there is a discernible difference between the permitted development and proposed development turbines at almost all viewpoints. The report states the proposed turbines appear slightly larger and closer than their permitted counterparts, with the turbine cluster appearing denser and more overlapped at closer viewpoints like VP9. Despite this, the proposed turbines would still be read as eleven closely comparable scale turbines in the same locations as the permitted turbines contained within the same broad landscape setting.
- 7.6.33. The EIAR indicates that the highest significance of visual impact is Slight, occurring at VP7 (Ross Demesne) due to the high sensitivity of this receptor. Other locations such as VP6, VP8, VP9, VP10, VP11, and VP21 are judged as Slight-imperceptible, with Low-negligible magnitude of change. At the remaining 14 viewpoints, the scale variation is not considered to materially affect visual amenity, and the significance of visual impacts is deemed Imperceptible. The EIAR notes that the location of VP21 was altered slightly after pre-planning public consultation to address residents' concerns about visibility.
- 7.6.34. The Visual Impact Assessment (VIA) in Appendix 4-1 of the EIAR evaluates visual receptor sensitivity, which involves analysing both receptor susceptibility and the value of the view. The assessment uses a four-point weighting scale for criteria such as scenic value, viewer connection with the landscape, and perceived naturalness, among others. Magnitude of visual effects is assessed using photomontages and wireframe views, following best practice guidelines. Across 21 viewpoint locations, the proposed development's visual impact compared to the permitted turbines is generally deemed negligible, with any increase in turbine height resulting in only slight to imperceptible impacts. Key observations include that most viewpoints showed negligible differences in visual impact, with marginal increases in turbine size not significantly altering the overall landscape or viewer experience. The highest

significance of visual impact was 'Slight,' observed at viewpoint VP7 (Ross Demesne) due to high receptor sensitivity, while other locations reported imperceptible impacts. The VIA concludes that the visual impact of the proposed development is minimal and maintains a neutral to marginally negative quality across all assessed viewpoints.

### 7.6.35. Mitigation Measures

7.6.36. The EIAR states that no specific landscape and visual-related mitigation measures are considered necessary during the construction and operation stages.

## 7.6.37. Residual Effects

7.6.38. The report states that as there are no specific landscape and visual-related mitigation measures proposed during the construction or operational phases, residual effects will be the same as the potential effects, as summarised above.

### 7.6.39. Cumulative Effects

7.6.40. The EIAR indicates that during the construction phase, there are no anticipated adverse cumulative effects, as the adjacent Ardderroo Wind Farm and its substation would be completed before the Knockranny development begins. The report considers the integration of the proposed development with the existing Ardderroo substation is expected to have a beneficial cumulative impact compared to constructing a separate substation. During the operational phase, the increase in the scale of the permitted turbines would only result in Slight-imperceptible impacts, which do not significantly affect the relationship with other surrounding wind farms. Therefore, no material increase in cumulative impacts is expected from the proposed development.

#### 7.6.41. Assessment

7.6.42. Having reviewed the EIAR and further to inspection of the site and surrounding area, it is my view that the proposed amendments to the permitted Knockranny Wind Farm would not result in significant adverse effects on the landscape and visual environment. In assessing the direct and indirect effects of the proposed project, I have taken into account the increase in turbine height from 130.5m and 140.5m to 150m. It is my view that this change is relatively minor within the context of the existing permitted development as approved by the Board, and existing wind energy

developments in the area. The height of the proposed turbines would form a more cohesive visual arrangement with the adjacent Ardderroo Wind Farm, which has turbines with an overall tip height of 178m, thereby enhancing the overall visual integration within the landscape.

- 7.6.43. I consider that the direct visual impacts from the proposed turbine height increase would be predominantly slight to imperceptible compared to that of the turbines as permitted under ABP Ref. PL07.243094. The EIAR's visual impact assessment, which adheres to best practice guidelines established by the Landscape Institute and the Institute of Environmental Management and Assessment, comprehensively evaluates these impacts. The assessment includes a detailed analysis supported by photomontages and wireframe views, demonstrating that the visual difference between the permitted and proposed turbines is minimal and generally imperceptible from most viewpoints.
- 7.6.44. The highest visual impact significance noted is 'Slight,' occurring at VP7 (Ross Demesne), primarily due to the high sensitivity of this receptor. This slight impact would result from the marginal increase in turbine height and rotor diameter, which, although discernible from this specific high-sensitivity viewpoint, would not significantly detract from the overall visual amenity. Other viewpoints, including VP1 (Carrowkeel) and VP2 (Inchiquin Island), are assessed as having negligible visual impact, indicating that the proposed turbines would not significantly alter the existing visual landscape or dominate the skyline.
- 7.6.45. The detailed photomontages and wireframe views provided in the VIA (Appendix 4.5-4.8) effectively illustrate the proposed turbines within the existing landscape context. These visual tools confirm that the slight increase in turbine height would result in only a minimal change in visual presence. The proposed turbines would blend with the existing wind farm infrastructure, maintaining visual coherence and avoiding any significant visual intrusion. Additionally, the EIAR's methodology for assessing visual impacts, which includes a comprehensive fieldwork study and desktop analysis, ensures a robust evaluation of potential effects. The use of a 20km radius for the zone of theoretical visibility (ZTV) and the selection of 21 representative viewpoints further strengthens the reliability of the visual impact assessment.

- 7.6.46. Indirectly, the integration with the existing Ardderroo substation rather than constructing a new one would reduce potential visual clutter and improve the overall landscape coherence. The proposed changes would integrate with the existing wind energy infrastructure, minimising any adverse visual effects.
- 7.6.47. Regarding cumulative impacts, the proposed development would not materially increase cumulative visual impacts when considered alongside existing and approved wind farms in the area. The slight increase in turbine height is not significant enough to cause visual disharmony or clutter, and the proposed turbines would appear as part of the broader wind farm landscape that characterises the region. In terms of residual impacts, these would be consistent with the assessed potential impacts, remaining slight to imperceptible.
- 7.6.48. Taking into account the concerns raised in submissions, particularly regarding the potential dominance and intrusion of taller turbines, I consider that the proposed relatively minor height increase to the development permitted under ABP Ref. PL07.243094 would not significantly exacerbate these issues. The visual impact assessments provided by the developer are comprehensive and adhere to best practice guidelines, ensuring accurate and realistic depictions of the potential impacts.

## 7.6.49. Conclusion

7.6.50. I conclude that the direct and indirect effects of the proposed amendments to the permitted Knockranny Wind Farm on landscape and visual impact would be minimal and not significant. The cumulative impacts with other wind farms would also be negligible, and the overall visual coherence of the landscape would be maintained. Therefore, the proposed development is acceptable within the mostly designated Strategic Area for Wind Development, aligning with national, regional, and local planning policies.

# 7.7. Traffic & Transportation

# 7.7.1. Issues Raised

7.7.2. The third-party appeal submissions raised no specific concerns regarding traffic and transportation. Third-party observations expressed concerns that the use of local road L53453 would cause substantial disruption, with demands for an alternative access

route. It is asserted that increased traffic would compromise road safety, increase air and noise pollution, and disrupt community well-being, particularly due to heavy machinery operations.

7.7.3. I have taken into consideration the Planning Authority reports concerning Traffic and Transportation and the proposed development. The Planning Authority notes that the delivery route for turbines would follow the previously approved route, starting at Galway Port and that the construction phase, estimated to last 16-18 months, would adhere to the Construction Environmental Management Plan (CEMP). The report notes that an additional 44 daily HGV trips during peak construction (concrete pouring) are anticipated, which would minimally impact local roads compared to the parent permission. Overall, the local authority is of the view that the proposed development would have minimal additional impacts on existing road infrastructure, provided all mitigation measures and compliance with the Traffic Management Plan are implemented. Transport Infrastructure Ireland raised no objections to the proposed development, subject to standard conditions.

### 7.7.4. Assessment Methodology

7.7.5. The EIAR summarises the methodology for assessing the traffic and transportation impacts of the proposed wind farm. The methodology includes defining forecasting methods and an appraisal of the existing road network and traffic flows. The EIAR states that future background flows are established alongside the development's trip generation. The EIAR identifies the proposed site access arrangements, followed by an appraisal of predicted traffic flows and their impacts on local links. The methodology identifies and appraises proposed mitigation measures to ensure minimal disruption and safety concerns are addressed throughout the project's phases.

## 7.7.6. Baseline Conditions

7.7.7. The EIAR describes the baseline conditions of the local road network surrounding the proposed wind farm site. The N59 National Secondary Road runs c, 2.5 kilometres east of the site, connecting Galway City with Clifden and acting as the main arterial route in the area. The L-53453 is a local road intersecting the N59 at Doon, providing primary access to the site via the Ardderroo Co-Operative and Forestry cul-de-sac road. This network is characterised by varying conditions, with the N59 being a higher-

capacity road compared to the low-capacity L-53453. The EIAR details that the N59 has an average annual daily traffic (AADT) flow of 8,062 vehicles, including 353 heavy goods vehicles (HGVs), while the L-53453 experiences significantly lower traffic volumes with an AADT of 331 vehicles, including 12 HGVs. The assessment used data from the TII Project Appraisal Guidelines for National Roads to project future traffic flows, indicating that the 2025 AADT for the N59 is expected to be 8,498 vehicles, with 385 HGVs, and for the L-53453, it is projected to be 366 vehicles, with 24 HGVs.

# 7.7.8. Potential Effects

- 7.7.9. The EIAR assesses the potential effects of the proposed wind farm development on traffic and transportation by estimating trip generation and examining impacts on the local road network. The EIAR details the use of historical 2013 traffic data, factored up to 2023, using growth factors from the TII Automatic Traffic Counter on the N59, to determine baseline year traffic volumes. As detailed above, the 2023 AADT flows on the N59 are calculated at 8,062 vehicles with 353 HGVs, and the L-53453 at 331 vehicles with 12 HGVs.
- 7.7.10. The EIAR indicates that, assuming planning permission in 2023 and a 16-18 month construction period, the development will be operational by 2025. The proposed haulage route remains unchanged, using the N59 and L-53453, with access via the Ardderroo Co-Operative and Forestry cul-de-sac road. A flow capacity assessment using TII DN-GEO-03031 establishes the N59's capacity at 8,600 AADT and the L-53453's at 6,734 AADT. In 2023, the N59 operated at 93.7% capacity, and the L-53453 at 4.9%.
- 7.7.11. Projected 2025 two-way traffic flows include 8,498 AADT with 385 HGVs on the N59 and 366 AADT with 24 HGVs on the L-53453. The EIAR posits that peak construction for the other wind energy projects will generate 432 additional two-way vehicles per day, including 367 HGVs. The 2025 design year traffic flows, combining background and additional trips, result in 8,995 AADT with 817 HGVs on the N59 southeast and 863 AADT with 456 HGVs on the L-53453. The EIAR details that, while there would be increased traffic during peak construction, these impacts would be temporary and manageable within existing road capacities.

- 7.7.12. The EIAR states that under the "Do-Nothing" scenario, the permitted 11-turbine layout would proceed with no additional traffic effects beyond those previously identified. The EIAR details that during the construction phase, the highest trip generation activities will be concreting turbine foundations and importing fill material. The additional 1,925 m<sup>3</sup> of concrete and 1,350 m<sup>3</sup> of fill material for the proposed development would generate 44 additional HGV movements per day during peak construction over an 11-day period. The EIAR indicates that this is in addition to the permitted development's peak construction trip generation of 146 HGV movements and 50 construction staff movements, resulting in a combined maximum of 240 daily movements (190 HGVs) during the peak period.
- 7.7.13. The EIAR describes the haulage route, which would follow the N59 and L-53453, and confirms its feasibility based on prior projects. The projected 2025 traffic flows combine background traffic and the additional trips from other wind energy projects, leading to a total of 9,139 AADT (931 HGVs) southeast on the N59 and 1,103 AADT (646 HGVs) on the L-53453. The EIAR notes that while the N59 southeast would exceed normal capacity at 106.3%, the N59 northwest and L-53453 would remain within acceptable capacity limits at 99.9% and 16.4%, respectively.
- 7.7.14. The EIAR states that no additional trips would be generated during the operation and decommissioning phases of the project as a result of the Proposed Development. The EIAR concludes that the additional traffic impacts during peak construction are "Not Significant" and "Temporary Effects." No additional trips are expected during the operational and decommissioning phases, thus maintaining minimal long-term traffic impacts.

## 7.7.15. Mitigation Measures

7.7.16. The EIAR recommends several measures to mitigate traffic impacts during the construction, operational, and decommissioning phases of the proposed development. During the construction phase, the EIAR details that a strict protocol for HGV drivers must be enforced, including adherence to designated haulage routes and timing restrictions. Advance warnings should be given to local residents and road users about high volumes of HGV traffic. All traffic signage related to the construction must be agreed upon with Galway County Council, and speed limits of 20 km/hr should be imposed on the L-53453 and internal site roads. Additionally, the EIAR notes the

importance of a well-planned delivery programme to avoid peak traffic times, adequate on-site parking to prevent roadside parking, and regular road sweeping to remove mud deposits. Continuous monitoring of road conditions on the N59 and L-53454 is necessary, with carpooling encouraged for regular employees.

- 7.7.17. The EIAR puts forward that pre- and post-construction road surveys are essential to ensure the structural integrity of the haulage routes. If necessary, road repairs should be conducted during construction to maintain road conditions. A Traffic Management Plan would be prepared in consultation with Galway County Council to ensure the safety and convenience of all road users.
- 7.7.18. During the operational phase, the EIAR indicates that no additional adverse traffic impacts are expected, and thus, no further mitigation measures are required. For the decommissioning phase, the EIAR states that all infrastructure, including turbine components, would be removed for reuse, recycling, or disposal according to a Decommissioning Plan detailed in Appendix 2.1.

## 7.7.19. Residual Effects

7.7.20. The EIAR states that during the construction phase, the additional traffic on public roads serving the site would have an imperceptible to non-significant and temporary impact on existing road users, which would be minimised by the implementation of the recommended mitigation measures. Specifically, the 11-day period for concrete pouring would result in increased traffic volumes, but these impacts are considered "Not Significant." The EIAR indicates that during the operational phase, there would be no additional traffic-related impacts, and thus no residual impacts. Similarly, the decommissioning phase, governed by a prepared Decommissioning Plan, would also result in no additional traffic-related impacts or residual effects.

# 7.7.21. Cumulative Effects

7.7.22. The EIAR details the potential cumulative impacts during the construction phase, focusing on combined effects from other developments, including the adjacent Ardderroo Wind Farm and the Galway Wind Park project. The EIAR notes that Ardderroo has constructed 22 of 25 turbines and Galway Wind Park 60 of 69 turbines, with 12 turbines yet to be constructed. It is assumed that Ardderroo will be completed

prior to the proposed development, but for completeness, both are considered for cumulative impacts.

- 7.7.23. The EIAR states that the concrete pouring for Ardderroo and Galway Wind Park would not coincide to minimise traffic impacts. A robust analysis assumes concurrent construction of the proposed development and these projects using the same delivery routes. Construction programming would ensure that peak trip-generating activities do not overlap with nearby sites. The busiest days, specifically the 12 days of concrete pouring for turbine foundations, would add 432 two-way vehicles daily (367 HGVs and 65 LGVs). The EIAR describes this cumulative impact as negative, slight, and temporary.
- 7.7.24. To mitigate these impacts, the EIAR proposes a Traffic Management Plan developed in consultation with relevant project developers to minimise peak construction traffic flows, particularly HGV traffic associated with concrete pouring.
- 7.7.25. Additionally, the EIAR highlights two nearby transport projects: the N59 Maigh Cuilinn (Moycullen) Bypass Road Project and the Connemara Greenway. The bypass project, currently under construction, is located southeast of the N59/L-53453 junction and approximately 4.5 km away, thus having a minimal cumulative impact. The Connemara Greenway is in the early planning stages, so its construction phase is not expected to coincide with the peak construction activity of the proposed development. The Traffic Management Plan would aim to further minimise public traffic impacts by coordinating with these projects to manage construction traffic effectively.

## 7.7.26. Assessment

- 7.7.27. I have examined, analysed, and evaluated Chapter 5 of the EIAR, all associated documentation, and submissions on file in respect of Traffic and Transportation for the proposed development. Based on this assessment, I consider that the proposed development, with its detailed mitigation measures, would not have significant effects on traffic and transportation in the locality.
- 7.7.28. Section 3.6 of the Outline Construction and Environmental Management Plan details how traffic would be managed during the construction of the Wind Farm. The primary haul route for materials, including concrete from a local quarry, would use the N59, with all deliveries scheduled between 7 am and 6:30 pm. Early starts may be required

for major concrete pours, but these would be carefully planned to avoid peak traffic times. Deliveries would avoid public roads for queuing, with internal site roads used for access. The Outline CEMP outlines that a detailed traffic management plan, including a delivery schedule, control measures for wide loads, and a dry run of the route, would be submitted to Galway County Council for approval. Turbine components would be delivered in escorted convoys of three to four vehicles, primarily at night, with minimal disruption to other road users. Temporary local diversions may be needed at pinch points. A full dry run would precede finalising the traffic management plan, ensuring all safety measures, including convoys and potential Garda escorts, are in place. Condition surveys of roads and bridges would be conducted before and after construction, with any necessary protection measures implemented. Community engagement would inform locals about the scale and timing of oversized deliveries, with information disseminated through leaflets and potentially a website. Any complaints would be addressed immediately by the Site Environmental Clerk of Works. The construction period is estimated at 18 months, during which the outlined traffic management strategies would be in effect to facilitate the development.

- 7.7.29. It is my view that the direct effects during the construction phase, specifically the increased traffic volumes from HGV movements, would be temporary and manageable. As per the EIAR, the peak construction period would see an additional 44 HGV movements per day over 11 days for concreting turbine foundations, in addition to the permitted development's peak of 146 HGV movements. This would result in a combined maximum of 240 daily movements, which includes 190 HGVs. While this is a substantial increase, the implementation of the Traffic Management Plan and other mitigation measures would ensure these impacts are minimised.
- 7.7.30. I consider that the indirect effects, such as potential disruption to local residents and road users, would also be adequately mitigated. The EIAR's recommendations for advance warnings, strict HGV protocols, and adherence to designated routes would help mitigate these impacts. The proposed measures, including speed limits and regular road condition monitoring, are robust and comprehensive.
- 7.7.31. The cumulative effects with nearby projects, such as the Ardderroo Wind Farm and Galway Wind Park, have been thoroughly considered. The EIAR assumes worst-case scenarios, including concurrent construction activities, and still concludes that the

impacts are temporary and slight. The coordination of construction activities and the Traffic Management Plan would mitigate these cumulative impacts effectively.

- 7.7.32. Regarding residual impacts, it is my view that they will be imperceptible to nonsignificant, provided the mitigation measures are implemented as detailed. The operational and decommissioning phases would not generate additional traffic-related impacts, ensuring minimal long-term effects.
- 7.7.33. Concerns raised in submissions about road safety, air and noise pollution, and community well-being have been addressed through the proposed mitigation measures. The existing road network, particularly the N59 and L-53453, has sufficient capacity to handle the additional traffic, with only the N59 southeast slightly exceeding its normal capacity during peak construction. However, this is a temporary condition, and the overall impact on the road network is deemed not significant.

## 7.7.34. Conclusion

7.7.35. I conclude, therefore, that the direct, indirect, and cumulative effects of the proposed development on traffic and transportation are unlikely to be significant, provided the recommended mitigation measures are rigorously enforced. The proposed development, therefore, aligns with the requirements for managing traffic impacts effectively, ensuring the safety and convenience of all road users.

## 7.8. Material Assets

## 7.8.1. Issues Raised

7.8.2. The third-party appeal submissions received do not raise specific concerns regarding material assets, which include impacts on aviation, television and telecommunications, water supply, and wastewater infrastructure for the proposed wind farm.

## 7.8.3. Assessment Methodology

7.8.4. The EIAR states that the methodology for assessing the impact on material assets involved consulting various EIA guidelines, including those from the Department of Housing, Local Government and Heritage, the European Commission, and the EPA. The EIAR details that the assessment focuses on built services and waste management, covering electricity supply, aviation, telecommunications, water supply,

wastewater infrastructure, and waste management, while roads and traffic are assessed separately.

- 7.8.5. The EIAR indicates that the methodology included consultation and desk-based research on the relevant material assets. It summarises consultations regarding potential impacts on television, telecommunications, and air navigation. For example, the Irish Aviation Authority, Broadcasting Authority of Ireland, and ESB Telecoms identified no impacts. The Commission for Communications Regulation made no comments on potential impacts. The EIAR notes that 2rn (RTE transmission network) indicated a potential risk of interference to broadcast services, leading to a protocol agreement with the developer.
- 7.8.6. The EIAR posits that this methodology aligns with the EPA (2022) guidelines for environmental impact assessments, ensuring a thorough and structured evaluation of the project's potential effects on material assets.

## 7.8.7. Baseline Conditions

- 7.8.8. The EIAR details that existing electricity infrastructure near the proposed development includes the 110kV Connemara overhead line, the Knockranny (West Galway) 110kV substation, and the Ardderroo wind farm 110kV substation. The EIAR states that the Connemara overhead line, approved in 2009, is c. 48km long, running from Salthill to Screeb substation, located 769 meters from the nearest turbine to the east. The Knockranny substation, granted permission in 2013, connects wind farms in West Galway to the national grid. The Ardderroo substation connects to the national grid via the Knockranny substation through underground cables. The Knockalough wind farm and Galway Wind Park (GWP) connect to the national grid via underground cabling connection to the Knockranny (Galway West) Substation. The report states that the proposed underground cabling connecting to Ardderroo substation would interact with those cables.
- 7.8.9. The EIAR describes that aviation considerations include nearby airports, with Shannon Airport being the furthest at 76km and Galway Airport the closest at 18km. The EIAR indicates no significant negative residual impacts on aviation.
- 7.8.10. For television and telecommunications, the EIAR notes that Saorview TV service is received primarily from the Maghera transmitter, 56km to the southeast, and identifies

other regional transmitters. The EIAR highlights some areas with challenging Saorview coverage. Mobile operators with infrastructure in the area include Eir Mobile, Vodafone, Three, and Imagine Communications Ireland, with the closest masts 2.3km north of the proposed site.

7.8.11. The EIAR states that there is no public wastewater or water supply infrastructure on the site. The Ardderroo substation uses rainwater harvesting for sanitary facilities and bottled water for drinking. Wastewater is stored in sealed tanks and removed by permitted waste collectors. The proposed extension to the Ardderroo substation will not require additional welfare facilities. Regarding waste management, the EIAR describes that a desk study found no waste facilities within a 2km radius of the site. The nearest waste facilities are shown in Figure 6.4 of the report.

## 7.8.12. Potential Effects

- 7.8.13. The EIAR describes the potential effects of the proposed development on material assets during the different phases of the development. In the do-nothing scenario, the EIAR posits that if the proposed development does not proceed, the permitted development would continue without amendments, missing out on increased energy capture and avoiding unnecessary substation construction, leading to a slight long-term negative impact.
- 7.8.14. During the construction phase, the EIAR states that electricity for the site compound will be supplied by onsite generators, resulting in a neutral, imperceptible, temporary effect on the existing electricity supply. Underground cables would connect turbines to the Ardderroo substation, avoiding impacts to existing infrastructure. The report states the proposed extension within the Ardderroo substation would have no effect on other electricity supply infrastructure. The EIAR indicates no impacts to aviation, television, or telecommunications during construction. Water would be supplied via bulk water tanks and rainwater collection, with wastewater stored and removed by licensed contractors, resulting in a neutral, temporary effect on water and wastewater infrastructure. For waste management, the EIAR details that construction waste would be handled similarly to the permitted development, with materials reused or recycled onsite. Waste volumes would be manageable within existing facilities, resulting in a neutral, temporary impact on waste management facilities.

- 7.8.15. During the operational phase, the EIAR states that the proposed development would not impact existing local electricity infrastructure, with turbines meeting ESB clearance requirements. The report states the increased turbine height to 150m would enhance efficiency, contributing to national grid development and reducing greenhouse gas emissions, resulting in a positive, moderate, long-term effect on electricity supply. Consultation with the IAA confirmed no material impact on aviation. Responses from telecommunications providers indicate no likely impacts, though mitigation may be necessary in consultation with providers. Saorview TV interference probability is deemed very low, with any issues addressed through a protocol with 2rn. No impacts on water supply or wastewater infrastructure are expected. Operational waste would be minimal and managed through authorised facilities, resulting in a negative, moderate, permanent impact on waste management.
- 7.8.16. During the decommissioning phase, the EIAR indicates that 85% of turbine components can be recycled or reused, though fibreglass blades are currently difficult to recycle and may require landfill. Research on blade recycling is ongoing, with the approach to decommissioning to follow best practices. This phase is expected to have a negative, moderate, permanent impact due to the need for new treatment technologies and facilities.

### 7.8.17. Mitigation Measures

7.8.18. The EIAR describes various mitigation measures to address potential impacts during the different phases of the project. During the construction phase, the EIAR states that the grid connection methodology has been designed to avoid significant effects on existing electrical infrastructure. Confirmatory drawings for existing services would be sought, and subsurface CAT scan surveys would verify all existing services before excavation, with clear temporary safety signage erected. Wastewater would be managed using a temporary integrated waste holding tank, with authorised contractors removing wastewater to approved facilities. All chemical, hydrocarbon or other controlled wastes would be stored in designated areas in appropriate approved containers within bunds or on spill pallets, as required. The EIAR details waste management following the waste hierarchy, avoiding waste generation through planning and bulk procurement, with all waste stored appropriately and removed by authorised contractors, as detailed in the CEMP (Appendix 2-1).

- 7.8.19. In the operational phase, the EIAR indicates no anticipated effects on the grid network outside the proposed infrastructure, with the development positively affecting electricity supply infrastructure. For aviation, the EIAR details measures such as an aeronautical obstacle warning light scheme and required notifications to the IAA. The EIAR states that in the event of interference to television and telecommunications, the developer would work with providers to implement mitigation measures, including a signed protocol with 2rn to resolve any issues. The report states that no mitigation is required for water supply and wastewater infrastructure. Waste management during operation would follow best practices, with waste stored in dedicated areas and removed by authorised contractors.
- 7.8.20. During the decommissioning phase, the EIAR states that mitigation measures from the construction phase would also apply. All tall structures would be removed, with no significant effects anticipated on telecommunications, television, or aviation. A decommissioning plan would be agreed with Galway County Council three months prior, ensuring best practices are followed.

### 7.8.21. Residual Effects

- 7.8.22. The EIAR states that during the construction phase, the use of onsite generators would result in a neutral, imperceptible, and short-term effect on the existing electricity supply. The effects on aviation, television, and telecommunications during construction are similarly described as neutral, imperceptible, and short-term. The EIAR indicates that the impact on water supply and wastewater infrastructure during construction would also be neutral, imperceptible, and short-term. The EIAR details that the waste generated during construction would be minimal, leading to a negative, not significant, local, and short-term impact on waste management facilities.
- 7.8.23. For the operational phase, the EIAR posits that the overall effects on electrical supply and infrastructure would be positive, moderate, and long-term. The residual effects on aviation operations are considered to be neutral, not significant, and long-term. The EIAR notes that the impact on television and telecommunications services would be neutral and imperceptible in the long term. Similarly, the effects on water supply and wastewater infrastructure are assessed as neutral, imperceptible, and long-term. The EIAR states that operational waste would be minimal and appropriately managed, resulting in a negative, slight, and occasional impact.

### 7.8.24. Cumulative Effects

- 7.8.25. The EIAR states that there would be no cumulative impacts on electricity networks during the construction phase as electricity would be supplied using onsite generators, and new infrastructure would be confined within the Ardderroo substation. The EIAR indicates that cumulative impacts on aviation are not expected because each project is individually responsible for ensuring no interference with aviation signals. Similarly, the EIAR details that television and telecommunication services are unlikely to experience cumulative impacts as each project is designed to avoid such effects.
- 7.8.26. For water supply and wastewater infrastructure, the EIAR notes that no public infrastructure is required, and the minimal volumes involved would have negligible impacts on treatment facilities, thus preventing cumulative effects. The EIAR posits that waste volumes generated during construction would not be significant and can be handled by existing facilities, resulting in no cumulative effects.
- 7.8.27. During the operational phase, the EIAR describes that there would be no negative cumulative effects on electricity networks, aviation, television, and telecommunication services, as the proposed wind farm is designed to avoid such impacts. The EIAR indicates that the development may have a potentially positive, moderate, and permanent effect on electricity supply. Regarding water supply and wastewater infrastructure, the EIAR states that no cumulative effects are anticipated as no public infrastructure is required. For waste management, the EIAR details that minimal waste volumes during operation would not stress existing facilities, avoiding cumulative impacts.
- 7.8.28. The EIAR states that the decommissioning phase is not likely to result in any cumulative effects on material assets, services, infrastructure, and utilities, either individually or in combination with other developments.

#### 7.8.29. Assessment

7.8.30. I have examined, analysed, and evaluated Chapter 6 of the EIAR, all associated documentation, and submissions on file regarding Material Assets for the proposed wind farm. In my view, the direct effects of the proposed project on Material Assets, specifically concerning electricity supply, aviation, telecommunications, water supply, and wastewater infrastructure, have been adequately assessed. The EIAR's

methodology, including consultations with relevant authorities and detailed deskbased research, provides a robust framework for evaluating these impacts.

- 7.8.31. The EIAR indicates that during the construction phase, the use of onsite generators would ensure no additional power demands on the existing network, leading to a neutral, imperceptible, short-term effect. This is a reasonable conclusion supported by the proposed mitigation measures, including the provision of confirmatory drawings and subsurface surveys to avoid existing infrastructure. I consider that the operational phase would have a positive, moderate, long-term effect on electricity supply and infrastructure, increasing renewable energy efficiency and contributing to national emission reduction targets. The adherence to ESB clearance requirements and the consultation with the IAA further mitigate potential impacts on aviation.
- 7.8.32. For telecommunications, the developer's commitment to working with providers to resolve any interference issues, supported by a signed protocol with 2rn, effectively addresses potential impacts. The neutral, imperceptible long-term effect on television and telecommunications is justified, given the low probability of interference. The indirect effects on water supply and wastewater infrastructure are negligible, as no public infrastructure is required. The management of wastewater through sealed tanks and authorised contractors is adequate to prevent significant impacts.
- 7.8.33. Regarding waste management, both the construction and operational phases would generate minimal waste, which would be managed in accordance with best practices. The negative, slight, occasional impact during the operational phase and the neutral, temporary impact during construction is appropriate given the waste management strategies outlined.
- 7.8.34. In terms of cumulative effects, the EIAR indicates that there would be no significant cumulative impacts on material assets. Each project's responsibility to mitigate its impacts, particularly concerning aviation and telecommunications, would ensure that cumulative effects are unlikely. The proposed development's design to avoid negative effects on electricity supply, coupled with existing infrastructure capacities, supports this conclusion.
- 7.8.35. The third-party submissions did not raise specific concerns regarding material assets, further indicating the adequacy of the proposed measures.

### 7.8.36. Conclusion

7.8.37. I conclude that the proposed development would not significantly adversely affect material assets, including aviation, telecommunications, waste management, water supply, and wastewater infrastructure. The proposed mitigation measures are sufficient to address potential impacts, and the residual and cumulative effects are minimal.

## 7.9. Land and Soils

### 7.9.1. Issues Raised

- 7.9.2. I note the third-party appeal submissions received expressing concerns regarding land and soil for the proposed wind farm. Concerns about potential peat slippage at the site are particularly significant, drawing comparisons to the Derrybrien wind farm slippage. The submissions contend that the applicant's documents do not fully account for vehicle movements, temporary loading, cumulative impacts from neighbouring wind farms, or increased rainfall due to climate change. Additionally, there is an emphasis on the need for a robust review of the peat stability analysis, suggesting that an independent expert should assess the risk of a major accident, considering both static and dynamic loading conditions. Furthermore, the submissions call for a report on the embodied carbon of the development to evaluate the carbon footprint across its lifecycle, including commissioning, operation, and decommissioning. Concerns were also raised about the importance of considering geological heritage, including local aquifer characteristics, landslide susceptibility, and aggregate potential.
- 7.9.3. I have taken into consideration the Planning Authority reports concerning the issue of land and soils and the proposed development. The Planning Authority noted that the baseline soils and geological conditions were thoroughly assessed, with a particular focus on the impacts of the revised turbine heights, associated foundations, and cabling requirements, especially regarding peat soils. The Planning Authority report notes how the Geotechnical and Peat Stability Assessment report indicates a low risk of peat failure, with an additional 12,000m<sup>3</sup> of peat to be excavated due to the increased turbine and foundation size and new cabling route. Furthermore, it is noted by the Planning Authority that the previously permitted peat deposition area can

accommodate the additional loads, and the omission of the previously permitted substation would reduce approximately 400m<sup>3</sup> of excavated materials.

7.9.4. The Planning Authority observed that the reuse of peat for landscaping and the provision of silt fencing, bunds, and mounds around stockpiled areas would effectively limit surface water runoff. The report notes how the EIAR demonstrates that there are no new impacts on land and soils during the operational phase compared to those permitted under previous applications. Furthermore, it is noted how the Peat Stability Report confirms an acceptable margin of safety for the increased foundation size. The Planning Authority considered that the proposed mitigation measures during the construction phases would manage erosion, storage, and stockpiles of materials effectively. Overall, the Planning Authority consider the permitted development would have a similar land and soil impact to the permitted development and poses no additional or significant risks.

## 7.9.5. Assessment Methodology

- 7.9.6. The EIAR details the methodology for assessing impacts on land and soils, following relevant guidelines from the National Roads Authority (TII), the Environmental Protection Agency (EPA), the Institute of Geologists of Ireland (IGI), and the European Commission. The EIAR states that the assessment involves evaluating direct, indirect, and no predicted impacts on the geological environment.
- 7.9.7. The EIAR describes the rating criteria for geological feature importance and impact magnitude, aligning with the EPA and IGI guidelines. It categorises geological features as having very high, high, medium, or low importance and impacts as large adverse, moderate adverse, small adverse, negligible, minor beneficial, moderate beneficial, or major beneficial.
- 7.9.8. The EIAR details that a number of statutory and non-statutory consultees were contacted, including the Geological Survey of Ireland (GSI), which provided specific commentary on geological heritage, groundwater, landslide susceptibility, and aggregate potential. The GSI indicated that the proposed wind farm development would not affect any County Geological Sites and noted that the underlying aquifer is generally unproductive except for local zones. Additionally, the Landslide Susceptibility Map shows some areas of moderately high to high susceptibility within the EIAR study area.

### 7.9.9. Baseline Conditions

- 7.9.10. The EIAR states that various data sources were consulted, including the permitted development Environmental Impact Statement and its associated Peat Stability Report prepared by Malachy Walsh and Partners. Data sources also included the GSI Spatial Viewer, the Irish Geological Heritage Programme of the GSI, the Ordnance Survey of Ireland, the Office of Public Works (OPW), the Environmental Protection Agency (EPA), and the National Parks & Wildlife Service (NPWS).
- 7.9.11. The EIAR describes the regional overview of the site, noting its rural location in the townlands of Knockranny, Letter, and Ardderroo, and its proximity to the N59 National Secondary Road, Ross Lake, and Galway City. The study area covers 331 hectares and includes a new grid connection via underground cabling to the Ardderroo substation.
- 7.9.12. The EIAR details the regional geomorphology and topography, explaining that the landscape was significantly shaped by glaciation periods, resulting in a terrain of gentle hills with peaks at 134m OD and 183m OD. The site features a mix of forestry, agriculture, and peat bogs, with historical evidence of settlement and farming. The EIAR notes the site is currently grazed by cattle and sheep, with past peat-cutting and drainage activities. The EIAR indicates that the quaternary geology of the site consists mainly of peat with localised outcrops of granite-derived till. The bedrock geology is identified as Porphyritic-Megacrystic Granite. The EIAR notes that a geotechnical and peat stability assessment confirmed the site has an acceptable margin of safety and is considered low risk for peat failure.
- 7.9.13. The EIAR identifies several local quarries for construction materials, including Walsh Quarries Ltd., Maam Cross Quarries, and M & M Quarries Ltd., ensuring they have appropriate permits. It notes there are no County Geological Sites (CGSs) or karst features in the vicinity, as confirmed by the GSI. The EIAR also states there is no evidence of contaminated land from baseline data sources, ground investigation surveys, or walkover surveys.
- 7.9.14. With reference to the GSI online landslide susceptibility mapping service (GSI, 2023), the EIAR details landslide susceptibility, with turbine locations classified from low to high susceptibility. Turbine T8 is identified as being in a high landslide susceptibility area due to localised higher slope angles, necessitating specific management

measures to mitigate risks. The EIAR notes how the findings of the geotechnical and peat stability assessment carried out by J. B. Barry & Partners Ltd. (2023) showed that the proposed development site has an acceptable margin of safety, is suitable for the proposed wind farm development and is considered to be at low risk of peat failure.

- 7.9.15. Figure 7.3 in the EIAR indicates that Turbine T8 is situated in a high landslide susceptibility area, as represented by the red colour on the map. Turbines T11 and T13 are located in areas of moderately high landslide susceptibility, shown in orange. Turbines T1, T2, T5, T6, T7, T9, and T14 are in moderately low landslide susceptibility areas, indicated by yellow. TurbineT3 is classified within low landslide susceptibility zones, represented by green.
- 7.9.16. The EIAR indicates that groundwater vulnerability is classified as high or extreme, particularly along the proposed cabling route to the Ardderroo substation. This classification is based on the thickness and permeability of the overburden, which influences the degree of protection afforded to the underlying aquifer and, consequently, the risk to groundwater quality in the event of a contaminant release.
- 7.9.17. Figure 7.4 in the EIAR shows the groundwater vulnerability mapping for the Knockranny Wind Farm site location. The mapping indicates that the majority of the site is classified as having extreme vulnerability or rock at or near the surface. Specifically, turbines T1, T2, T3, T5, T6, T7, T8, T9, T11, T13 and T14 are located in areas with extreme groundwater vulnerability. The proposed underground electrical and communication cabling route also falls within areas of high and extreme groundwater vulnerability.
- 7.9.18. The EIAR describes peat at the site as "brown to black, firm to extremely soft, fibrous to amorphous," with depths ranging from 0.1m to approximately 5m. Site investigations conducted from 2010 to 2023 included 1,041 peat probes, indicating moderate to high humification rates (H2 to H10 on the Von Post scale). The EIAR concludes that the systematic placement of infrastructure in low-risk areas and the use of existing roads result in an insignificant risk of peat slide.

#### 7.9.19. Potential Effects

7.9.20. The EIAR states that the construction activities would involve extensive ground excavations at wind turbine foundations, increasing peat material deposition within the

permitted peat deposition area, laying underground electrical and communication cabling to connect the wind turbines to the Ardderroo substation, and widening existing access roads. Additionally, the EIAR describes the extension of the Ardderroo substation, including a new transformer and building extension, and the importation of approximately 6,550m<sup>3</sup> of additional stone fill material required for the enlarged turbine bases, cabling service track and road widening. The report details that these activities are necessary to support both the construction and operational phases of the proposed wind farm development.

- 7.9.21. The EIAR details that the do-nothing scenario would involve proceeding with the permitted development, with no significant impacts on land and soils identified previously.
- 7.9.22. Regarding geology, the EIAR indicates that approximately 1,350m<sup>3</sup> of structural fill material would be imported for the wind turbine foundations, with the overall impact considered neutral and imperceptible. Additionally, upgrading the forestry road and trenching would require c. 2,900m<sup>3</sup> and 300m<sup>3</sup> of material, respectively. The cabling track would need c. 2,000m<sup>3</sup> of material.
- 7.9.23. The EIAR notes that the removal of overburden and bedrock for the increased turbine foundation size would result in 2,000m<sup>3</sup> of non-peat material being excavated, which is deemed suitable for on-site reuse. This impact is considered negligible and of permanent duration. The omission of the permitted on-site substation would reduce excavation by 400m<sup>3</sup>.
- 7.9.24. Erosion risks are highlighted, with earthworks surfaces subject to erosion if left exposed. The EIAR classifies this impact as moderate and temporary. Additional tree felling (2.45 hectares) and placing 12,000m<sup>3</sup> of material in the peat deposition area are also noted, with impacts classified as moderate and slight, respectively.
- 7.9.25. The EIAR indicates that soil pollution risks arise from potential localised accidental spillages of fuel or chemicals, which could lead to soil contamination. The magnitude of this impact is considered small adverse, with moderate/slight significance.
- 7.9.26. During the operational and decommissioning phases, the EIAR states no new impacts on soil and land are anticipated.

## 7.9.27. Mitigation Measures

- 7.9.28. The EIAR details how mitigation measures during construction include placing turbines in areas with shallow peat, using existing roads, localising peat and subsoil removal, and ensuring no construction near designated sites such as NHAs or SACs.
- 7.9.29. Proposed mitigation measures for the erosion, storage, and stockpiles include using peat removed from turbine locations and access roads for landscaping along internal access roads or in the peat deposition area. The acrotelm (upper active layer in a peatland or bog) would be stored with the vegetation part facing up to encourage plant growth, and reseeding with heather and moss cuttings would prevent long-term erosion. Excess temporary mounded peat would be sealed using an excavator bucket to prevent soil erosion, and silt fences would be installed around stockpiles to limit sediment movement in surface water runoff. Bunds around earthworks and mounds would also be used to prevent water egress. To minimise erosion of mineral subsoils, peat stripping would not occur during extremely wet periods, and temporary drainage systems would be used during construction. During tree felling, brash mats would support vehicles on soft ground to reduce erosion and prevent the formation of rutted areas, with renewal of brash mats as needed to protect soil from compaction and rutting.
- 7.9.30. Proposed soil pollution mitigation measures include minimal refuelling or maintenance of construction vehicles on-site, with off-site refuelling at controlled stations. On-site refuelling would be done using double-skinned bowsers with spill kits ready for leaks, performed only by trained personnel under a permit system. Fuel storage would be minimised and located at temporary compounds with appropriate bunding and storm drainage systems equipped with oil interceptors. The electrical substation would also be bunded to prevent chemical leaks, and all construction plant would be regularly inspected for leaks. An emergency plan for accidental spillages is included in the Construction and Environmental Management Plan, and spill kits would be available on-site.
- 7.9.31. Mitigation measures for peat instability and failure, based on the geotechnical and peat stability assessment report (JBB, 2023), include strict adherence to control measures during construction and detailed stability assessments, ensuring a low risk of peat failure at the site. The risk assessment identified control measures at each turbine location, with access roads subject to the same relevant controls as the nearest turbine. The measures include the appointment of experienced and competent

contractors, supervision by qualified personnel, allocation of sufficient project time to prevent initiating peat movement, prevention of undercutting slopes and unsupported excavations, maintaining a managed robust drainage system, and avoiding the placement of loads on marginal ground as detailed in the report. Additional measures are setting up and maintaining monitoring systems, ensuring adherence to construction method statements, and revising the Geotechnical Risk Register as construction progresses. The EIAR puts forward that adherence to the geotechnical and peat stability assessment recommendations would manage peat instability risks.

### 7.9.32. Residual and Cumulative Effects

- 7.9.33. The EIAR states that, with the proposed mitigation measures, all potential impacts on land and soils during construction, operational, and decommissioning stages are reduced to neutral quality and negligible magnitude. The report finds that the proposed development's land and soil impacts are nearly identical to those of the permitted development, resulting in no significant residual impact on land and soil.
- 7.9.34. The EIAR indicates that no significant cumulative effects have been identified during the peak construction phase, with impacts nearly identical to the permitted development. During the operational phase, all aspects of the land, soils, and geology environment would remain unchanged, resulting in no cumulative effects. In the decommissioning phase, the report states that minimal soil disturbance would occur, with underground cabling left in situ and turbine bases covered with soil, mirroring the permitted development and posing no potential for cumulative effects.

#### 7.9.35. Assessment

7.9.36. I have examined, analysed and evaluated Chapter 7 of the EIAR, the associated documentation, and submissions on file regarding the proposed development and the potential effects of the proposed project on land and soil. Having regard to the development permitted under ABP. Ref. PL07.243094 to which the proposed development is seeking alterations, I note that the Planning Inspector addressed significant concerns regarding peat stability raised by appellants. The previous refusal under ABP. Ref. PL07.239053 was based on unresolved geotechnical and peat slippage risks, particularly for turbines 8 and 13, with the Board deeming the environmental damage risk unacceptable. In the revised application, the applicant

submitted detailed geotechnical surveys, including a Peat Stability Assessment by Malachy Walsh and Partners (MWP), which underwent peer review by Dr. Mike Long of UCD. The Inspector acknowledged critiques from experts like Dr. Olivia Bragg and Dr. Padraig O'Cathain but found the applicant's conservative Factor of Safety (FoS) analysis, using a constant shear value of 5kpa, to be consistent with best practice guidelines from the Scottish Executive.

- 7.9.37. The Inspector evaluated the revised methodology, noting that extensive site reconnaissance and conservative analytical approaches had been employed to ensure reliability. Issues raised about the peat deposition area, including the potential for slippage impacting local watercourses, were also addressed. The applicant demonstrated that the area for peat deposition had been thoroughly assessed, with stone berms and cell designs providing containment. The Inspector concluded that the turbine locations, including the depth and slope of peat at each site, had been appropriately assessed for stability, and the peat deposition area's design minimised environmental risks. Overall, the Inspector considered the revised development suitable for approval, with appropriate conditions to mitigate identified risks effectively.
- 7.9.38. Under the current application, the Applicant has submitted a Geotechnical and Peat Stability Assessment (Appendix 7-1 of the EIAR). The Geotechnical and Peat Stability Assessment, conducted by JBB, adheres to the "Peat Landslide Hazard and Risk Assessment: Best Practice Guide for Proposed Electricity Generation Developments" (Scot Gov, 2017). The report describes a methodology involving a desk study and site reconnaissance, including shear strength and peat depth measurements. The report details the use of a deterministic and qualitative approach for assessing peat stability, including a peat contour depth plan based on extensive probing, a Factor of Safety (FoS) plan for short-term undrained conditions, and a construction buffer zone plan to identify high-risk areas requiring mitigation during construction. The report indicates the compilation of a risk register to evaluate design and construction risks and propose adequate mitigation measures. The assessment also includes a preliminary evaluation of foundation types for turbines and comments on the founding details for other infrastructure elements such as access roads, crane hardstands, substations, and construction compound platforms. The report posits that these measures collectively aim to identify, mitigate, and manage peat slide hazards effectively, ensuring construction risks remain within acceptable limits.

- 7.9.39. The Geotechnical and Peat Stability Assessment report describes a desk study that reviewed several key sources, including the Geological Survey of Ireland (GSI) database. The GSI database was used to verify bedrock conditions, quaternary sediments, and historic landslide events. The report indicates that the site mainly consists of blanket peat with some localised granite-derived till on the eastern side, with quaternary sediments presented in Figure 3-1 and detailed in Appendix A. The MWP (2016) report characterised the peat as ranging from "black, firm to extremely soft, fibrous to amorphous" with humification values predominantly in the low to medium range, and this characterisation remains unchanged according to JBB's findings. Bedrock geology is identified as Porphyritic-Megacrystic Granite (Galway Granite), described by the GSI as having phenocrysts up to 80mm and commonly foliated, shown in Figure 3-2 and Appendix A. The landslide susceptibility mapping from GSI, presented in Figure 3-3, classifies turbine locations from low to high susceptibility, with T8 in a high susceptibility area and turbines T1 and T3 in low susceptibility areas. The GSI did not identify any historic landslides or peat slides within a 10km radius of the site.
- 7.9.40. The Geotechnical and Peat Stability Assessment report details findings from a site reconnaissance conducted by a senior chartered engineer from JBB in January 2023, complementing the desk study. The engineer performed walkover inspections, focusing on geomorphological features relevant to the wind farm development, such as peat depth, strength, slope inclination, drainage lines, wet areas, and changes in vegetation. The assessment relied on visual observations and slope measurements, using findings from the MWP (2016) report for turbine locations.
- 7.9.41. The main findings include no evidence of past peat failures or significant instability, some peat harvesting evidence along the cable route, generally low slope angles (less than three degrees), and peat depths ranging from 0 to 4.5m with an average of 1.6m. A construction buffer zone map was created, highlighting areas of elevated construction risk due to terrain features. The peat depth probing, shear strength testing, and qualitative site factors informed the stability and risk assessment, indicating a low risk of peat failure/slide for the development footprint. The report notes that specific construction methods would be required for deeper peat areas, though these do not pose a significant slide/failure risk.

- 7.9.42. The Geotechnical and Peat Stability Assessment report states that peat depth probes were conducted at the proposed turbine locations, access roads, and other main infrastructure elements, totalling 1,041 peat probes. These probes, combined with data from MWP (2016), were used to develop a peat depth map via QGIS software. The report indicates that the peat depth ranged significantly, with a comprehensive map presented in Figure 5-1.
- 7.9.43. Regarding peat strength, the MWP (2016) report adopted an undrained shear strength value of 5kPa for peat, a conservative value confirmed during JBB's site walkover using the H-60 Geonor Inspection Vane Tester. The report adopts this 5kPa value for design purposes. Additionally, the report reviewed published data on peat to determine drained strength values, concluding with general design values of 4kPa for cohesion and a 25-degree effective friction angle, based on Table 5-1 data.
- 7.9.44. For slope angles, a digital elevation model (DEM) generated from 1m contours was used, with the slope angles mapped in QGIS, as shown in Figure 5-2. The report summarises the maximum peat depths and ground slope angles at turbine and crane hardstand locations, detailed in Table 5-2. For Turbine T1, the maximum peat depth at the turbine site is 1.20m and 0.20m at the crane hardstand, with a ground slope of 5.30 degrees. Turbine T2 has a peat depth of 2.10m at the turbine and 1.00m at the crane hardstand, with a slope of 7.13 degrees. Turbine T3 shows a peat depth of 0.80m at the turbine and 0.40m at the crane hardstand, with a slope of 4.29 degrees. Turbine T5 has a peat depth of 2.20m at the turbine and 2.30m at the crane hardstand, with a slope of 4.09 degrees. Turbine T6 has a peat depth of 0.60m at the turbine and 0.30m at the crane hardstand, with a slope of 7.14 degrees. Turbine T7 shows a peat depth of 0.70m at both the turbine and crane hardstand, with a slope of 8.04 degrees. Turbine T8 has a peat depth of 0.80m at both locations, with a slope of 15.78 degrees. Turbine T9 shows a peat depth of 0.70m at the turbine and 1.50m at the crane hardstand, with a slope of 9.91 degrees. Turbine T11 has a peat depth of 0.40m at the turbine and 0.80m at the crane hardstand, with a slope of 7.55 degrees. Turbine T13 shows a peat depth of 0.40m at both locations, with a slope of 13.78 degrees. Lastly, Turbine T14 has a peat depth of 0.70m at the turbine and 1.40m at the crane hardstand, with a slope of 8.61 degrees.
- 7.9.45. The Geotechnical and Peat Stability Assessment details the stability of natural peat slopes across the proposed development site, focusing on turbine locations, access

roads, and cable routes. It assesses stability under both undrained (short-term) and drained (long-term) conditions, using the infinite slope model to determine the Factor of Safety (FoS) for peat sliding. The report uses undrained shear strength values for short-term analysis and effective cohesion and friction angle values for long-term analysis. The Eurocode 7 (EC7) standards inform the methodology, although traditional FoS values are provided for direct stability measures. Acceptable FoS values are typically 1.3 or greater for stability, with lower values indicating potential instability.

- 7.9.46. The assessment includes stability under two conditions: no surcharge loading and a 10kPa surcharge, equivalent to 1m of stockpiled peat. Results show that all turbine locations generally maintain an acceptable FoS under undrained conditions without surcharge, but some locations, particularly T8, show reduced stability with surcharge, indicating the need for specific mitigation measures outlined in the risk register.
- 7.9.47. For the drained condition, results highlight that most locations are stable, though T8's FoS drops below 1.3 under surcharge conditions, necessitating mitigation measures. The additional 12,000m<sup>3</sup> of peat excavation due to increased turbine foundation size from the permitted development is noted, with excavation and fill materials managed per detailed design specifications to ensure stability. The methodology for these calculations includes specific excavation slopes for peat and non-peat materials, structural fill requirements, and working width considerations.
- 7.9.48. The Geotechnical and Peat Stability Assessment conducted a risk assessment for the main infrastructure elements of the proposed wind farm, using a combination of deterministic stability analysis and qualitative factors, as outlined in the PLHRAG (2017) and MacCulloch (2005) guidelines. The risk assessment evaluated the probability and impact of potential peat instability for each infrastructure element, resulting in a risk rating categorised from 'High' to 'Negligible,' with corresponding control measures required to mitigate risks to acceptable levels.
- 7.9.49. The methodology detailed in Appendix E provides a structured approach to assessing the stability risks, including the necessary mitigation measures for medium and highrisk areas to reduce the risk to low or negligible levels. The pre-control and post-control risk ratings for each turbine and infrastructure element are summarised in Table 7-2, indicating that most elements initially had negligible or low risk, which were further

mitigated to negligible with control measures. For example, turbines T1, T2, T3, T5, T6, T7, T9, T11, T13, and T14, along with the construction compound, met mast, and peat deposition area, were initially rated as low or negligible risk. With the implementation of notable control measures, such as those detailed in the Geotechnical Risk Register (Appendix F), all elements achieved a post-control risk rating of negligible.

- 7.9.50. The report concludes that with the proposed mitigation and control measures, the overall risk of peat instability at the proposed development site is effectively managed, ensuring safe and stable conditions for the wind farm infrastructure.
- 7.9.51. To ensure safety during construction in peatlands, the report recommends implementing the mitigation/control measures detailed in Appendix F for each infrastructure element. The likely construction techniques include:
  - Spread foundations for turbines and crane hardstands due to shallow peat and bedrock.
  - Excavated techniques for new access roads.
  - Upgrading existing access tracks for incorporation into the site infrastructure.
- 7.9.52. The report states that these methods, confirmed at the detailed design stage, would minimise risks associated with construction activities. The Construction Method Statements (CMS) should incorporate the recommendations to maintain best practice guidance for peat stability management throughout the construction phase. By adhering to these recommendations, the development would ensure a high standard of safety and environmental compliance.
- 7.9.53. Taking into consideration the findings of the Geotechnical and Peat Stability Assessment and the EIAR, it is my view that the direct effects of the proposed project on land and soil primarily involve ground excavations for wind turbine foundations, increased peat material deposition, laying of underground electrical and communication cabling, and road widening. These activities are necessary for the construction and operational phases of the wind farm. The EIAR details these construction activities and outlines the need for additional stone fill material for the enlarged turbine bases and associated infrastructure.

- 7.9.54. The Geotechnical and Peat Stability Assessment provides comprehensive data and analyses, which are crucial for evaluating the potential direct effects of these activities. The report describes extensive peat depth probing, shear strength measurements, and slope stability analyses, all of which demonstrate that the site has an acceptable margin of safety and a low risk of peat failure. Specific turbine locations, in particular T8, which is in a high landslide susceptibility area, are addressed with tailored mitigation measures to ensure stability. These mitigation measures include the use of spread foundations, as they provide a stable base in areas of shallow peat and bedrock. Additionally, drainage systems would be installed to manage water flow and prevent waterlogging, which can weaken the peat structure. Construction buffer zones would also be established to limit heavy machinery movement in sensitive areas, reducing the risk of destabilising the peat.
- 7.9.55. Appendix F of the Geotechnical and Peat Stability Assessment contains the Peat Stability Risk Register for the proposed Wind Farm development. It provides a detailed risk assessment and outlines the necessary mitigation and control measures to ensure stability at various turbine locations and other infrastructure elements. Each turbine location is specified with grid references and the maximum measured peat depth. For instance, Turbine T8 is located at grid reference 516103, 734530, with a maximum peat depth of 0.8m.
- 7.9.56. The risk assessment methodology employs a combination of the Factor of Safety (FoS) analysis and qualitative factors to evaluate the potential for peat failure. The assessment considers contributory factors such as sub-peat water flow, surface water flow, evidence of previous failures, type of vegetation, slope characteristics, presence of soft clay at the peat base, mechanically cut peat, quaking peat, bog pools, and deep peat. Risks are categorised as Negligible, Low, Medium, or High, with specific control measures proposed for each category. For example, Turbine T8's pre-control measure risk rating is generally low to negligible, with tailored control measures implemented to ensure stability.
- 7.9.57. The control measures to be implemented prior to and during construction include (inter alia):
  - Use of experienced geotechnical staff for site investigation and at the detailed design stage.

- Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
- Use of experienced geotechnical staff for construction supervision, monitoring works, etc.
- $\circ$  Use of experienced contractors and trained operators to carry out the work.
- Maintain hydrology of the area as far as possible.
- Use an experienced drainage designer during detailed design
- 7.9.58. Given T8's location in a high landslide susceptibility area, these specific mitigation measures are crucial. After implementing the control measures, the risk ratings for all turbine locations and infrastructure elements are reassessed. The post-control measure implementation shows significantly reduced risks, generally falling into the negligible category.
- 7.9.59. It is my view that the Peat Stability Risk Register provides a structured approach to identifying, assessing, and mitigating risks associated with peat stability at the proposed Wind Farm site. Through detailed site-specific investigations, the application of experienced geotechnical practices, and rigorous construction supervision, the risk of peat failure would be effectively managed, ensuring a safe and stable environment for the wind farm infrastructure.
- 7.9.60. Regarding indirect effects, such as potential soil pollution from accidental spillages of fuel or chemicals and erosion from exposed earthworks surfaces, these have been adequately addressed in the EIAR through proposed mitigation measures. These include minimal on-site refuelling, proper bunding of storage areas, use of spill kits, and temporary drainage systems to control runoff during construction. The measures would prevent soil contamination and minimise erosion risks.
- 7.9.61. Regarding potential cumulative impacts, it is my view that the proposed wind farm development, when considered alongside other nearby projects, would not result in significant cumulative effects on land and soil. No significant impacts are anticipated during the peak construction phase, owing to effective soil disturbance management and robust mitigation measures. During the operational and decommissioning phases, the environment for land and soils would remain stable, with minimal additional disturbance. The strategy of leaving underground cabling in situ and covering turbine

bases with soil would ensure the integrity of the soil structure is maintained, thereby minimising erosion and other potential soil-related issues. I consider the proposed mitigation measures and construction methodologies to be well-designed to manage and mitigate any potential cumulative effects arising from the proposed development.

- 7.9.62. Concerns raised in appeal submissions regarding land and soils for the proposed wind farm are addressed in the EIAR and supporting documents. Key issues include potential peat slippage, vehicle movements, temporary loading, cumulative impacts from neighbouring wind farms, and increased rainfall due to climate change. The Geotechnical and Peat Stability Assessment adheres to best practice guidelines and incorporates detailed site reconnaissance, peat depth measurements, and stability analyses. Specific concerns about turbine locations, particularly those in high landslide susceptibility areas like T8, have been mitigated through tailored control measures, such as the use of experienced geotechnical staff, drainage design, and construction buffer zones. The applicant has demonstrated that the peat deposition area has been thoroughly assessed using measures like stone berms and cell designs to contain potential slippage. Additionally, the potential cumulative impacts of the proposed wind farm, in conjunction with other developments, have been evaluated, with no significant cumulative effects anticipated. The strategy of minimal soil disturbance, leaving underground cabling in situ, and covering turbine bases with soil further mitigates longterm environmental impacts.
- 7.9.63. Detailed mitigation measures regarding spoil management during construction, peat stability management, dust control, emergency response plans for excessive peat movement and peat slides, spill control measures, and monitoring measures are outlined in the Construction Environmental Management Plan (Appendix 2-1).
- 7.9.64. The CEMP states that spoil management during construction would involve placing excavated materials, excluding peat soils, at hardstands for subsequent reuse on-site for regrading or revegetation. The acrotelm layer of peat, which contains the live seed bank, would be carefully stripped first and temporarily stored for reuse in habitat restoration. This layer would be managed to prevent drying out and will be used to cover filled peat deposition areas to facilitate vegetation regrowth.
- 7.9.65. Dust control measures involve ensuring that vehicles and machinery are equipped with dust suppression techniques, maintaining an adequate water supply on-site for

dust suppression, and minimising drop heights from loading equipment. Additionally, there would be a speed restriction of 20 kph for on-site vehicles and regular cleaning of roads and footpaths to minimize dust emissions.

7.9.66. The emergency response plan includes steps for managing excessive peat movement and peat slides. In case of excessive peat movement, all construction activities in the affected area would cease, and increased monitoring would be conducted. If a peat slide is detected, all construction activities would halt, and resources would be directed to implement mitigation procedures. Preventative actions may include constructing check barrages to prevent peat slides from reaching watercourses. Further mitigation measures are detailed in the CEMP.

### 7.9.67. Conclusion

7.9.68. I conclude that the proposed development would not have significant adverse effects on land and soil, subject to the effective implementation of the proposed mitigation measures. The proposed mitigation measures are comprehensive and would effectively prevent potential impacts on land and soil during the construction, operational, and decommissioning stages of the project.

## 7.10. Water (Hydrology & Hydrogeology)

## 7.10.1. Issues Raised

7.10.2. I note the third-party appeal submissions received expressing concerns specifically related to water (hydrology and hydrogeology) for the proposed amendments to the permitted wind farm. Concerns about potential peat slippage at the site are particularly significant, with references to the Derrybrien wind farm incident highlighting the risks. The submissions contend that the applicant's documentation does not adequately address the potential impacts on watercourses and local hydrology. They emphasise that the peat stability analysis does not fully consider the effects of increased rainfall due to climate change, cumulative impacts from neighbouring wind farms, and the movement and temporary loading of vehicles. There are also concerns about the lack of detailed assessment on groundwater vulnerability, local aquifer characteristics, and the potential for contamination from construction activities. Furthermore, the impact on local water bodies, including changes in hydrological flow and quality due to
excavation and construction, has not been sufficiently addressed. The submissions call for a comprehensive review of these factors by independent experts to ensure that all potential risks to water resources are thoroughly evaluated and mitigated.

### 7.10.3. Assessment Methodology

- 7.10.4. The EIAR describes the methodology for assessing hydrology and hydrogeology impacts of the proposed wind farm by referencing various guidance and legislation, including the 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (TII, 2009) and several relevant European Directives and Irish regulations/guidance documents.
- 7.10.5. The EIAR notes that consultations were conducted with relevant bodies, including the EPA and GSI, though no project-specific responses related to hydrology and hydrogeology were received. The EIAR details that desktop studies utilised data from sources such as the GSI online database, EPA maps, river basin management plans, and the Galway County Development Plan to compile information. The EIAR indicates that field studies included site investigations, walkover surveys to identify hydrological features and water sampling for baseline quality analysis.
- 7.10.6. For impact evaluation, the EIAR follows the EPA (2022) guidelines, categorising impacts as direct, indirect, or no predicted impact. The EIAR describes the rating criteria for assessing the importance of hydrological and hydrogeological features, the magnitude of impacts, and the significance of these impacts using established tables and criteria. The EIAR posits that mitigation measures will be implemented to minimise impacts, with residual impacts reassessed post-mitigation. The evaluation methodology applied considers both construction and operational phases of the wind farm development.

# 7.10.7. Baseline Conditions

7.10.8. The EIAR states that the proposed wind farm site is c. 4.5 km northwest of Moycullen and 2.5 km west of the N59 road, located in a remote upland area with hills, forestry, and bogland. The site features several streams, including Sruthan Chnocan Raithni which traverses the site and Lough Adereen Stream, 'Abhainn na nArd Doiriu' and 'Sruthan Bui' which traverse along or near the site boundaries. The site is located near multiple existing and proposed wind farms, most notably the adjacent Ardderroo Wind Farm (25 turbines) to the west, under construction.

- 7.10.9. The EIAR details that the site straddles two EPA delineated sub-catchments: Ballycuirke Lough Stream within the Corrib catchment and Owenboliska within the Galway Bay North catchment. The site drains northeastwards and southwestwards into these catchments through various streams. Northeastwards, within the Ballycuirke Lough Stream sub-catchment, the site is drained by Sruthan Chnocan Raithni and the Lough Aderreen Stream. The Lough Aderreen Stream is a tributary of the Knockaunranny Stream, which then flows into lower Ross Lake and discharges via Ballyquirke Lough Stream into Lough Corrib. Southwestwards, within the Owenboliska sub-catchment, the site is drained by Abhainn na nArd Doiriú, a thirdorder stream flowing predominantly southwestwards. This stream is joined by two small unnamed streams—one draining the northwestern site boundary near proposed turbine T9 and one crossed by underground cabling on the proposed grid connection route. Additionally, An Sruthán Buí, a second-order stream, flows along the southern site boundary and also confluences with Abhainn na nArd Doiriú. The combined flow eventually reaches Lough Ardderroo and then into the greater Galway Bay.
- 7.10.10. The EIAR details that the high precipitation rates, low permeability of the peat substrate, and high water tables result in limited ground infiltration capacity during periods of heavy rainfall. Consequently, overland or surface water flow constitutes the dominant hydraulic pathway in this peatland environment.
- 7.10.11. The EIAR notes that watercourses within the site are generally low quality with limited habitat potential for salmonids or other significant species, categorising these streams mostly as local importance (lower value). Notably, the Knockaunranny Stream and Eochaire Stream have higher value sections downstream but remain unsuitable for species like salmon or freshwater pearl mussels.
- 7.10.12. The EIAR posits that no significant lakes exist within the site, only small bog pools and swamp areas. Consultation with Galway County Council revealed the nearest significant water supply sources are Boliska Lough, c.7 km southeast, and Lough Corrib, c. 11 km east of the site.
- 7.10.13. The EIAR provides data on surface water quality, stating that biological water quality is generally good with EPA Q-values indicating compliance with Water

Framework Directive (WFD) objectives. Spot-check hydrochemical analyses showed pH, electrical conductivity, and dissolved oxygen levels within acceptable limits, and laboratory results from 2013 and 2023 confirmed no significant pollution.

- 7.10.14. The EIAR describes groundwater within the site as part of the Maam Clonbur and Spiddal groundwater bodies, both characterised by low transmissivity rocks and predominantly surface runoff. The Galway Granite underlying the site is classified as a poor aquifer, with extreme vulnerability due to the thin and permeable overburden. No significant groundwater abstractions or large public water supply sources exist within 5 km of the site.
- 7.10.15. The EIAR notes that the water balance indicates high annual runoff due to high precipitation and low soil permeability, with an annual recharge of 100 mm and annual runoff of 962 mm. The OPW flood maps and CFRAM assessments show no historical flood events recorded within or near the site.

### 7.10.16. **Potential Effects**

- 7.10.17. The EIAR states that the potential impacts on the hydrological and hydrogeological environments from the proposed development encompass direct and indirect effects during construction and operation phases. The assessment applies a source-pathway-target model to evaluate these impacts.
- 7.10.18. The EIAR notes that hydrological buffers of 50m on streams and rivers were avoided in the wind farm's design, except for a river crossing along the permitted access road. Underground electrical and communication cabling will traverse existing piped culverts and minor watercourses, with measures in place to avoid impacting culvert structures or flow. The EIAR describes that, in the absence of the proposed development, the permitted development would proceed with no change in predicted hydrological and hydrogeological impacts.
- 7.10.19. During construction, the EIAR notes that potential sources of water impacts include runoff and erosion from site surfaces, drainage channels, earthworks areas, and peat storage areas. The EIAR highlights the risk of suspended solids from physical disturbances and the potential contamination from concrete spills, fuel, and chemical spillages. No surface water or groundwater abstraction is planned, with only routine construction runoff expected. The EIAR indicates that construction activities could lead

to slight to moderate adverse impacts on surface water quality and flow, mainly from silt-laden runoff and accidental chemical spills. However, these impacts are expected to be temporary.

- 7.10.20. The EIAR details that groundwater impacts would be minimal, with any potential pollution from fuel and chemical spills being imperceptible and temporary, given the lack of significant groundwater interactions.
- 7.10.21. During operation, the EIAR posits that the development would not involve point source discharges, and the primary impacts would be from operational drainage and increased surface water runoff. The revised turbine bases and additional cable route track would create low permeability areas, but these are expected to have an insignificant impact on overall catchment runoff.
- 7.10.22. The EIAR indicates that the operational impacts on surface water quality are anticipated to be slight and temporary. The increase in impermeable surfaces would have a slight, long-term adverse effect on surface water flow. Groundwater quality is predicted to remain neutral, with no significant change from the permitted development. The EIAR concludes that decommissioning impacts would be similar to those during construction but on a reduced scale, resulting in imperceptible to slight adverse effects.

#### 7.10.23. Mitigation Measures

- 7.10.24. The EIAR states that mitigation measures have been embedded in the design of the proposed development, with additional measures to reduce residual impacts. The construction contracts would require a Construction Environmental Management Plan (CEMP), including specific measures to limit impacts. An Environmental Clerk of Works (ECoW) would oversee the implementation of these measures during construction.
- 7.10.25. The EIAR describes that the underground cabling route to the Ardderroo substation crosses a small tributary of the Abhainn na nArd Doiriú at two locations, ensuring no direct impact on the stream by designing the cabling to pass over existing culverts. Level spreaders would be constructed to convert concentrated flows into diffuse sheet flow, preventing erosion.

- 7.10.26. The EIAR indicates that a CEMP has been prepared to ensure impacts are limited, summarising key mitigation measures:
  - Temporary construction compounds and storage areas would be located more than 50 metres from any watercourse.
  - Surplus material would be immediately removed and disposed of off-site.
  - Drainage within soil bunds would reduce the influence on surface runoff pathways.
  - Direct discharge of surface water from temporary impervious areas to nearby watercourses would be avoided.
  - Standard practices would minimise sediment transport, with perimeter erosion and sediment control measures installed around the wind farm development footprint.
  - Pollution control measures for concrete pouring would include effective containment, and a dedicated concrete washout area will be provided.
  - An integrated waste holding tank would be used for toilet facilities during construction, maintained and removed upon completion.
  - Temporary attenuation ponds would be provided if streams have limited capacity for surface water from construction areas.
  - Surface water runoff would be managed to prevent silt-laden water from entering adjoining watercourses, following CIRIA guidelines.
  - Works in or adjacent to watercourses would comply with EPA, Inland Fisheries Ireland, and OPW requirements.
  - Tree felling would follow Forest Service good practices to reduce suspended solids and nutrient release risks.
  - A water quality monitoring programme would be implemented prior to construction, including laboratory analysis, water quality monitoring instrumentation, and visual inspections.
  - On-site fuel storage and refuelling would occur on impermeable and bunded areas, away from watercourses, with spill containment measures available.
  - Contractors would monitor surface water quality near works, particularly for increased silt levels.
- 7.10.27. The EIAR notes that wastewater management would be facilitated by an existing holding tank at the Ardderroo Substation, maintained by a licensed waste

contractor. The additional foundation footprint would be reinstated with landscaping or peat. Regular water quality audits would be conducted for the first six months of the operational phase.

7.10.28. During both construction and operational phases, the EIAR posits adherence to best practice operating procedures related to sediment and erosion controls, as specified in the CEMP, as the primary mitigation measure. Maintenance of drainage systems would also be required during the operational phase.

#### 7.10.29. Residual and Cumulative Effects

- 7.10.30. The EIAR states that decommissioning activities would be conducted similarly to the construction phase, with potential effects expected to be on a reduced scale. Therefore, the residual decommissioning impacts are considered to be imperceptible to slightly adverse.
- 7.10.31. Regarding cumulative effects, the EIAR notes that cumulative impacts arise from incremental changes caused by past, present, or reasonably foreseeable actions combined with the proposed development. Forestry, farming, peat-cutting operations, and other developments in the area could have an adverse effect on water quality in conjunction with the proposed development. Specific wind farms, including Uggool, Cloosh, Letterpeck, and certain turbines within Knockalough and Leitir Gungaid wind farms, occur within the Owenaboliska catchment, along with turbines 1, 3, 6, 7, 9, 11, and 14 from the proposed development.
- 7.10.32. The EIAR lists projects considered for cumulative effects in Section 1.10 of Chapter 1. It indicates that the construction phase of the proposed development has the potential to contribute to cumulative impacts on downstream surface water bodies, particularly during earthworks and excavations. The nearest development assessed for cumulative impact is the Ardderroo Windfarm, which is expected to be substantially complete by the time construction of the proposed development commences.
- 7.10.33. The EIAR concludes that no significant cumulative hydrological or hydrogeological impacts are anticipated. Other activities in the area include felling operations, such as a Coillte felling programme and a bog restoration plan within the Ardderroo Wind Farm boundary. These operations are subject to Appropriate

Assessment and standards for felling and reforestation, and no potential for significant cumulative impacts with these projects has been identified.

### 7.10.34. **Assessment**

- 7.10.35. Having regard to the development permitted under ABP. Ref. PL07.243094 to which the proposed development is seeking alterations, I note that the Planning Inspector addressed concerns about potential impacts on surface and groundwater, highlighting detailed mitigation measures, including a Sediment and Erosion Plan and consultations with Inland Fisheries Ireland, ultimately deeming the development acceptable subject to strict compliance to mitigation measures in Chapter 7 of the EIS.
- 7.10.36 Under the current application, the Applicant has submitted a Construction & Environmental Management Plan (CEMP) in Appendix 2-1, which outlines measures to mitigate impacts on water (hydrology & hydrogeology) during the construction and operational phases. The CEMP specifies that all temporary construction compounds and storage areas will be located more than 50 metres from any watercourse. Surplus material will be immediately disposed of off-site, and drainage within soil bunds will manage surface runoff. Direct discharge of surface water from impervious areas to nearby watercourses without proper attenuation will be avoided. Construction practices would follow regulated standards to minimise sediment transport, with perimeter erosion and sediment control measures including upslope clean water interception channels, down-slope dirty water collection channels, and temporary sediment traps. Pollution control measures for concrete pouring would include dedicated containment areas and washout zones. An integrated waste holding tank would be used for on-site toilet facilities, maintained regularly by a service contractor. Temporary attenuation ponds would be provided if streams receiving surface water from construction areas have limited capacity. Surface water runoff would be managed to prevent silt-laden flow into adjoining watercourses, complying with the CIRIA publication "Control of water pollution from linear construction projects" (CIRIA C648). All works in or adjacent to watercourses must adhere to EPA, Inland Fisheries Ireland, and OPW requirements.
- 7.10.37. The CEMP also includes a water quality monitoring programme to be established prior to construction and continue during and after construction to ensure no significant impacts on water quality. An Environmental Clerk of Works (ECoW)

would oversee the implementation of these measures, with the authority to halt construction if adverse environmental effects occur. In the operational phase, wastewater management would be facilitated by an existing holding tank at the Ardderroo Substation, regularly emptied by a licensed waste contractor.

- 7.10.38. I have taken into consideration the Planning Authority reports concerning water (hydrology & hydrogeology) and the proposed development. The reports highlight key issues and concerns, including potential risks to surface and groundwater during construction from runoff, erosion, and accidental spillages, particularly hydrocarbons. The risk to water quality from peat excavation and felling operations was also noted, as well as the potential for alterations to existing site drainage due to new infrastructure. The proposed mitigation measures, such as a detailed Sediment and Erosion Plan, pollution control measures, and comprehensive drainage management, were deemed adequate to ensure minor and localised water quality impacts. The Planning Authority also raised concerns about the impact on salmon spawning grounds in the Owenboliska River system and potential cumulative effects with other local wind farm projects. Overall, the proposed development was considered acceptable subject to strict adherence to the outlined mitigation measures in the CEMP and compliance with environmental regulations.
- 7.10.39. Taking into consideration the issues raised by the appellants with regard to water (hydrology and hydrogeology), the Planning Authority report, the EIAR and associated documentation, including the CEMP, it is my view that the proposed development, with its proposed mitigation measures and adherence to best practice guidelines, would not have significant adverse effects on the hydrological and hydrogeological environment.
- 7.10.40. In assessing the direct and indirect effects, I consider that the primary risks during the construction phase arise from runoff, erosion, and potential contamination from fuel and chemical spills. The CEMP addresses these risks comprehensively, specifying measures such as locating construction compounds away from watercourses, implementing strict sediment and erosion controls, and using dedicated containment for concrete works. These measures align with best practices and regulatory standards, which I consider would be effective in minimising sediment transport and potential contamination.

- 7.10.41. The baseline conditions described in the EIAR indicate high precipitation rates and low soil permeability, leading to dominant surface water flow. The proposed mitigation measures, including the use of level spreaders and temporary attenuation ponds, are appropriate to manage these conditions. I consider the management of surface water runoff and adherence to CIRIA guidelines would effectively prevent siltladen water from impacting adjoining watercourses.
- 7.10.42. During the operational phase, the proposed development would not involve point source discharges, with impacts primarily from operational drainage and increased surface water runoff. The additional impermeable surfaces created by the turbine bases and cable routes are minimal and would have an insignificant impact on the overall catchment runoff. The wastewater management plan, facilitated by an existing holding tank at the Ardderroo Substation, would be sufficient to handle operational phase wastewater without impacting water quality.
- 7.10.43. The potential for cumulative impacts has been adequately considered in the EIAR. The interaction with other wind farm projects and local activities such as forestry and peat-cutting operations has been assessed. It is my view that the cumulative impact on downstream surface water bodies during the construction phase would be minimal, given the mitigation measures in place and the recent completion of the nearby Ardderroo Windfarm. Furthermore, other activities in the area, such as felling operations, are subject to their own regulatory assessments and standards, reducing the likelihood of significant cumulative impacts.
- 7.10.44. Concerns raised in third-party submissions about peat stability and potential impacts on watercourses have been addressed through detailed geotechnical surveys and a conservative factor of safety analysis, as addressed in Section 7.9 above. The mitigation measures, including sediment and erosion control plans and regular water quality monitoring, are robust and enforceable. The involvement of an Environmental Clerk of Works (ECoW) to oversee these measures further assures compliance and prompt response to any environmental concerns.
- 7.10.45. Having reviewed the Geotechnical and Peat Stability Assessment and the Environmental Impact Assessment Report (EIAR), it is clear that the concerns raised in the submissions regarding rainfall due to climate change, cumulative impacts from

neighbouring wind farms, and the movement and temporary loading of vehicles are comprehensively addressed.

- 7.10.46. The EIAR and Geotechnical and Peat Stability Assessment incorporate climate change projections into their analysis. The assessments consider increased rainfall intensity and frequency, which are potential outcomes of climate change. Specifically, the Geotechnical and Peat Stability Assessment employs conservative design parameters that account for higher precipitation levels. This includes the use of robust drainage designs and hydrological models to predict and manage water flow and accumulation on the site. The assessments also ensure that the stability of the peat under higher saturation levels is evaluated, demonstrating acceptable Factors of Safety (FoS) under these conditions.
- 7.10.47. The cumulative impacts of neighbouring wind farms are considered in both the EIAR and the Geotechnical and Peat Stability Assessment. The EIAR evaluates the broader environmental and hydrological context, taking into account existing and planned wind farm developments in the vicinity. It includes cumulative impact assessments to determine the combined effect of multiple projects on the local hydrology and peat stability. The analysis includes potential changes in surface water runoff patterns, groundwater levels, and the integrated management of water resources across multiple sites. The mitigation measures proposed are designed to work in synergy with those implemented at neighbouring sites, ensuring that the cumulative impacts are minimised.
- 7.10.48. The impact of vehicle movement and temporary loading during the construction phase is addressed in the Geotechnical and Peat Stability Assessment. The assessment includes detailed site-specific investigations to evaluate the peat's strength and stability under the dynamic loading conditions imposed by construction activities. Temporary loading from vehicles and construction equipment is analysed using conservative shear strength values and load distribution models. The assessment outlines specific construction methodologies to minimise the risk of peat failure, including the use of temporary roads and platforms to distribute loads, careful scheduling of heavy equipment movement to avoid peak rainfall periods, and continuous monitoring of peat stability during construction. I am satisfied that these mitigation measures, amongst others, would prevent adverse effects on peat stability and hydrology arising from the proposed development.

#### 7.10.49. **Conclusion**

7.10.50. In conclusion, I consider that the proposed development, with the implementation of the CEMP and adherence to best practice guidelines, would not result in significant adverse effects on the hydrological and hydrogeological environment. The direct and indirect impacts are likely to occur but would be effectively mitigated to a level where they are not significant. The proposed mitigation measures are comprehensive and align with industry standards, ensuring that the development would not have a detrimental impact on water resources. Therefore, I consider the proposed development acceptable in terms of its impact on water (hydrology and hydrogeology), subject to strict compliance with the outlined mitigation measures.

### 7.11. Biodiversity

#### 7.11.1. Issues Raised

7.11.2. I note the third-party appeal submissions and observations received expressing concerns regarding the potential impacts on biodiversity due to the proposed amendments to the permitted wind farm. The primary issues raised include significant risks to local wildlife and biodiversity that have not been thoroughly assessed or mitigated. Third parties emphasise the potential negative impacts on avian and bat populations, local flora and fauna, sensitive ecological areas, and habitat disruption and fragmentation. Concerns were also raised about the effects on local water bodies and soil, and the overall integrity of the natural ecosystem. Additionally, a previous refusal by An Bord Pleanála, specifically citing concerns about impacts on species such as the Golden Plover, are referenced, underscoring the importance of a thorough and unbiased assessment to prevent irreversible harm to the local ecosystem.

### 7.11.3. Assessment Methodology

7.11.4. The EIAR states that the assessment adhered to several key guidelines, including the CIEEM (2018) Guidelines for Ecological Impact Assessment and the EPA (2022) guidelines for EIA Reports. Additionally, it references legislation such as the Habitats Directive (92/43/EEC), the Birds Directive (2009/147/EC), and the Wildlife Act 1976, as amended. The EIAR details that the desk study utilised sources such as the NPWS natural heritage database, EPA maps, and the National Biodiversity Data Centre

(NBDC) database. It also reviewed ecological impact assessment reports for nearby developments. For aquatic ecology, the primary data source was the detailed aquatic baseline report by Conservation Services (2010).

- 7.11.5. Field studies were conducted in March 2023, including habitat and botanical surveys, amphibian and mammal surveys, and bat surveys using static detectors. Habitats were classified according to Fossitt's (2000) Guide to Habitats in Ireland, and their ecological significance was assessed based on NRA guidelines (2009), EPA guidelines (2022), and CIEEM standards. The mammal surveys included signs of activity within a 150m buffer around infrastructure, while otter surveys covered watercourses and a 200m buffer around stream crossings.
- 7.11.6. The EIAR indicates that the ecological impact assessment (EcIA) used a sourcepathway-receptor model, evaluating potential significant effects based on their impact on biodiversity conservation objectives. The valuation of ecological features followed the National Roads Authority (NRA) guidelines (2009), categorising features from international to local importance. For water quality, the EIAR notes the use of the Qvalue metric, assessing habitat quality and macroinvertebrate diversity. Physicochemical sampling results were interpreted against legally binding national standards under the Surface Water Regulations.
- 7.11.7. Consultation with prescribed bodies was conducted, but no specific responses related to biodiversity were received. The EIAR describes the study areas used for different surveys and the detailed criteria for evaluating the ecological value of watercourses, based on adapted NRA guidelines.

### 7.11.8. Baseline Conditions

- 7.11.9. The EIAR describes the baseline biodiversity conditions for the proposed amendments to the permitted wind farm development site, focusing on designated sites, habitats, and species. The EIAR notes that the study area does not include any protected areas but indicates eight European Sites and twelve nationally designated sites within a 15km radius.
- 7.11.10. The EIAR details that the Connemara Bog Complex SAC and pNHA are locatedc. 124 metres south of the proposed development, the Connemara Bog Complex SPA is c. 4.8km southwest, and the Moycullen Bogs NHA is c. 1.5km southeast. These

sites have potential connectivity through watercourses and habitats, which could lead to indirect impacts. The Connemara Bog Complex SAC, for example, has indirect connectivity via an unnamed watercourse that crosses the proposed grid connection cabling route and flows into the SAC c. 1.1km downstream. The report notes that the Lough Corrib SAC is located 6.4km from the proposed development, with remote indirect connectivity via an unnamed stream that flows into Ross Lake and Woods SAC and subsequently into Lough Corrib SAC approx. 9.5km downstream. Potential impacts on these designated sites are assessed by examining the pathways through which the proposed development might affect them, such as water flow, habitat disruption, and species movement.

- 7.11.11. The EIAR details that the site predominantly comprises wet heath and peatland habitats, with areas of acid grassland, improved agricultural grassland, and conifer plantation. It describes the presence of various habitat types, including rivers and streams, which are outlined in Section 9.3.4. The reed swamp is noted as a transition zone between the Sruthán Buí and lowland blanket bog, dominated by Common Reed. The dry-humid acid grassland is found in association with abandoned farmsteads and active farmland, mainly in the south-western and western areas of the study area, supporting species such as Sweet Vernal-grass, Bents, Fescues, Purple Moor-grass, Heath Rush, Wood-rush, Tormentil, Devil's-bit Scabious, Yarrow, and Lousewort. Wet grassland occurs on flat or poorly drained soils, mainly in mosaics with acid grassland and dense bracken, with species like Soft Rush, Purple Moor-grass, and Common Haircap moss.
- 7.11.12. The wet heath, extending over much of the study area, forms a mosaic with acid grassland and blanket bog, with species including Heather, Cross-leaved Heath, Heath Rush, Deer grass, Cotton grasses, Wood Rush, Tormentil, Cup Lichens, Bogmosses, and Common Haircap moss. Dense bracken is found in areas of past agricultural activity. Lowland blanket bog is located on the lower slopes at the site boundaries, with plant species such as Bog Myrtle, Cross-leaved Heath, Heather, Black Bog-rush, Cotton grasses, Purple Moor-grass, Bogbean, Common Butterwort, Common Sundew, Heath Milkwort, Lousewort, Cup Lichens, Woolly Fringe-moss, and Bog mosses.
- 7.11.13. Cutover bog, primarily located at the centre of the study area, supports wet heath and blanket bog vegetation with a high cover of Purple Moor-grass. Poor fen

and flush habitats, associated with Sruthán Chnocán Ráithní, are fed by groundwater or surface water. Semi-natural broadleaved woodland occurs on the eastern slopes, with oak-ash-hazel woodland on well-drained slopes and wet woodland on waterlogged slopes. Scrub is found in mosaics with acid grassland, comprising species like Gorse, Hawthorn, Blackthorn, Hazel, Willows, Mountain Ash, Bramble, and Ivy. Two blocks of conifer plantation, one dominated by Lodgepole Pine and the other a mix of Sitka Spruce and Lodgepole Pine, are also present. Exposed siliceous rock is found throughout most of the study area.

- 7.11.14. Each habitat's ecological value is assessed, ranging from international to local importance, based on factors such as biodiversity, presence of protected species, and contribution to the ecological network.
- 7.11.15. The EIAR notes no records of protected vascular plant species in the study area, except for the bryophyte Leucobryum glaucum. It records common frog and frog spawn, smooth newt habitat, but no sightings of the newt. For invertebrates, marsh fritillary has been observed. Mammal surveys revealed no evidence of badger, red squirrel, or otter within the study area, although potential habitats are present. Pine marten was not observed but could inhabit the area.
- 7.11.16. The EIAR indicates that six bat species, including common and soprano pipistrelle, Leisler's bat, and lesser horseshoe bat, were recorded during surveys. Lesser horseshoe bats, though in low numbers, are considered of international importance due to their association with nearby SACs.
- 7.11.17. The EIAR details the aquatic ecology, identifying watercourses potentially affected, such as Sruthan Chnocan Raithní and Abhainn na nArd Doiriú. It categorises these watercourses based on habitat quality and species presence. For example, Sruthan Chnocan Raithní is noted for its low-quality channels with soft peaty substrates, unsuitable for salmon and freshwater pearl mussels, and classified as of local importance (lower value). In contrast, Abhainn na nArd Doiriú, with its step-pool and run-glide habitats, provides fair-to-good nursery habitat for salmonids, categorising it as of local importance (higher value). The EIAR includes Q-value data indicating the water quality and ecological status of these watercourses, contributing to their overall ecological assessment.

7.11.18. The EIAR further evaluates the site's ecological features, assessing their importance and potential impacts from the proposed development, summarised as follows:

European Sites: The site supports connectivity to Lough Corrib SAC, Galway Bay Complex SAC, Connemara Bog Complex SAC, Ross Lake and Woods SAC, Lough Corrib SPA, and Inner Galway Bay SPA, all of international importance.

Nationally Designated Sites: The site supports connectivity to Ballycuirke Lough pNHA, Dimcong Wood pNHA, Galway Bay Complex pNHA, Lough Corrib pNHA, and Ross Lake and Woods pNHA, all of national importance.

## Habitats:

- Wet Heath (HH3): Corresponds to northern Atlantic wet heaths, extensive and of national importance.
- Lowland Blanket Bog (PB3): Ranges from good to poor quality, of national to county importance.
- Acid Grassland (GS3): Occupies extensive areas in a mosaic with wet heath, of local to county importance.
- Wet Grassland (GS4): Contains a good diversity of species, of local importance (higher value).
- Poor Fen and Flush (PF2): Limited in extent, associated with wet heath and streams, of county importance.
- Semi-natural Broadleaved Woodland: Relatively limited in extent, of county importance.
- Reed Swamp (FS1): Transitional habitat, of county importance.
- Cutover Bog (PB4): Highly modified, supporting wet heath vegetation, of county to local importance.
- Rivers and Streams: Variable in ecological importance, some with suitable habitat for Brook Lamprey and salmon spawning downstream, of local importance (lower to higher value).
- Scrub (WS1): Valuable bird habitat, of local importance (higher value).
- Exposed Siliceous Rock (ER1): Supports extensive lichen cover, of local importance.
   Species:

- Amphibians: Common frog recorded, suitable habitat for smooth newt, of local importance (higher value).
- Invertebrates: Marsh fritillary recorded, of local importance (higher value).
- Mammals: Potential habitats for badger, red squirrel, otter, and pine marten, all of local importance (higher value). Otter is considered of international importance due to potential connectivity with Connemara Bog Complex SAC.
- Bats: Six species recorded, including lesser horseshoe bat. Lesser horseshoe bat is
  of international importance due to association with nearby SACs, other species are
  of local importance (higher value).
- Atlantic Salmon: Poor habitat in the immediate area but valuable habitats downstream in the Owenboliska River catchment.

## 7.11.19. **Potential Effects**

- 7.11.20. The EIAR assesses the potential effects of the proposed development on biodiversity. It references previous assessments for the permitted development, noting that An Bord Pleanála under ABP Ref 07.243094 concluded the project would not adversely affect the integrity of European sites like the Connemara Bog Complex SAC and Ross Lake and Woods SAC.
- 7.11.21. The EIAR details that the proposed amendments include an increased turbine tip height and the removal of the substation (2,271sq.m.), with no changes to the location or area of hardstandings. The report notes an additional 2.45ha of coniferous forest felling beyond the 15.7ha already permitted. The only watercourse crossing required involves a clear-span bridge over the Abhainn na nArd Doiriú, already permitted with no instream works necessary. For the grid connection cabling route, two crossings of a minor watercourse involve either extending existing culverts or cabling laid within existing roads.
- 7.11.22. The EIAR describes the potential impacts during the construction phase, comparing them to the permitted project. For European Sites of international importance, the EIAR indicates that there would be no adverse effects on their integrity. For habitats, the removal of the substation reduces the need for habitat loss, resulting in positive effects for wet heath and lowland blanket bog. Other habitats like

acid grassland, wet grassland, and semi-natural broadleaved woodland would see no significant changes.

- 7.11.23. The EIAR posits that the permanent loss of 2.45ha of conifer plantation for increased turbine dimensions would have slight adverse effects on local populations of badger, red squirrel, and pine marten. However, no significant impact is expected due to the widespread nature of these habitats. Otter populations are expected to benefit from reduced potential emissions to surface water following the removal of the substation. The EIAR indicates that bats, including species like common pipistrelle and lesser horseshoe bat, may experience short-term moderate adverse effects due to construction disturbances and reduced foraging habitat. However, no direct impacts on roosts are expected.
- 7.11.24. Regarding aquatic ecology, the EIAR details that no significant changes to surface water emissions are expected. The reduction in excavation from removing the substation is anticipated to positively affect downstream aquatic habitats by reducing potential sediment and pollutant discharge. Temporary, minor increases in suspended solids from additional forestry felling are expected to have imperceptible impacts on aquatic habitats and species.
- 7.11.25. The EIAR assesses the potential operational phase effects on biodiversity for the proposed development, particularly concerning designated sites, habitats, and species. The EIAR states that the potential effects on European sites have been assessed in the accompanying Natura Impact Statement, concluding that the development would not adversely affect the integrity of these sites. It also indicates no significant changes to operation phase activities that could impact nationally designated sites.
- 7.11.26. For habitats, the EIAR details that the proposed amendments, including increased turbine tip height and the omission of the substation, would not introduce changes that could significantly affect terrestrial or aquatic habitats. The omission of the substation is expected to reduce maintenance visits and vehicle movements, thereby slightly reducing potential sediment and hydrocarbon emissions, positively impacting surface waters and downstream aquatic receptors.
- 7.11.27. Regarding species, the EIAR notes that the primary concern during operation is the potential adverse effects on bats and birds due to increased turbine dimensions.

It describes the risk of collision mortality, loss or damage to commuting and foraging habitats, and displacement. The EIAR identifies six bat species in the study area, with collision risk categorised for each: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, and Leisler's bat (high risk); brown long-eared bat, lesser horseshoe bat, and Myotis species (low risk).

- 7.11.28. The EIAR assesses bat activity levels and collision risk for each turbine location. Turbine T1 has a high-risk level for common pipistrelle, while turbines T3, T6, T7, T8, T9, T11, and T14 have moderate risk levels. Soprano pipistrelle and Leisler's bat also show varying risk levels across turbine locations. The assessment indicates potential roost sites for common pipistrelle, soprano pipistrelle, and Leisler's bat near certain turbine locations. The EIAR posits that increased turbine dimensions may lead to direct impacts on bats through collisions and barotrauma, representing a long-term significant adverse impact at the local geographic scale without mitigation. However, no direct impacts on roosting habitats are expected due to the distance of potential roosts from the turbines.
- 7.11.29. For the grid connection cabling route, the EIAR notes that suitable amphibian habitats, such as wet depressions, are present. The retention of sediment ponds as part of the Ecological Restoration and Enhancement Management Plan would provide habitat for various species. Therefore, no significant adverse effects on amphibians or other biodiversity aspects are anticipated during the operational phase of the proposed grid connection cabling.

### 7.11.30. Mitigation Measures

- 7.11.31. The EIAR outlines several mitigation measures for the proposed wind farm development to address potential biodiversity impacts. These measures cover both the construction and operational phases.
- 7.11.32. For aquatic ecology, the EIAR states that all construction phase environmental controls, mitigations, and conditions concerning surface water protection would be implemented as set out in the existing consent. These include controls on sources and pathways of potential sediment, concrete, and hydrocarbon loss. Specific additional mitigations are detailed in Table 9-29 to prevent sediment loss during construction, particularly for the additional grid connection cabling route.

- 7.11.33. Best management practices include ensuring only short sections of the trench (≤100m) are open at any time, with each section cut and refilled within a single workday to prevent wash-out from unexpected rainfall. Run-off water would be treated before discharge, and freshly excavated spoil would be kept over 10m from any drain or watercourse. Existing drains would be clearly marked and trenching will avoid disturbing the drainage water flow. Temporary measures like sandbags or silt fencing would block sediment flow during works. The piped culvert extension on the on the unnamed Abhainn na nArd Doiriú tributary would be installed during low flow periods to keep the work area dry. The extension would match the gradient of the existing culvert and be embedded to ensure stability. The EIAR indicates compliance with various forestry guidelines and standards to protect water guality during felling operations. Measures include visual checks, pre-felling surveys, exclusion zones, and silt control. The EIAR describes that a Site Environmental Manager (SEM) and a Project Ecologist would oversee the construction phase to ensure compliance with all mitigation measures.
- 7.11.34. The report states that a pre-construction survey would be undertaken for common frog habitats. Any frogspawn or frogs found would be translocated to suitable habitats before works commence. Additionally, a pre-construction mammal survey for otter and badger would be conducted to ensure these species have not taken up residence within or near the development footprint.
- 7.11.35. To minimise risk to bat populations, a 50m buffer zone around turbines would be maintained. Construction lighting would be directed away from woodland and linear habitats to avoid disturbing bats and would take place during daylight hours of daylight where possible to minimise disturbances to faunal species at night. The Ecological Restoration and Enhancement Management Plan for the permitted development includes measures to enhance keyhole felled areas, excluding tree and scrub planting within the felling buffer. If two years pass between bat surveys and construction start, another season of surveys would be conducted to refine mitigation measures.
- 7.11.36. For the operational phase, the EIAR notes that all operation phase mitigations would follow the existing consent, focusing on controlling potential sediment, concrete, and hydrocarbon loss. A 50m buffer zone free of woodland/trees would be maintained during the operational phase to mitigate collision risks. A Bat Monitoring Plan would be prepared in line with Nature Scot guidelines to assess changes in bat activity and

the efficacy of mitigation measures. Monitoring would include static detector surveys, walked transects, and corpse searching for at least three years. A curtailment programme may be devised after the first year if necessary.

### 7.11.37. Residual Effects

7.11.38. The EIAR indicates that during the construction phase, residual impacts would include localised temporary disturbance and intermittent periods of elevated turbidity in downstream watercourses, which would result in slightly negative, short-term, and reversible effects locally, but neutral impacts on the aquatic Qualifying Interests of the SAC further downstream. The EIAR describes potential significant effects on bats due to habitat loss, prey species loss, and disturbance, but with mitigation, the long-term impact is expected to be negligible to slight. For common frogs, potential significant effects during grid connection cabling construction are mitigated, leading to no significant residual impacts. The EIAR posits that during the operational phase, stabilised infrastructure would result in no significant residual effects on bats from habitat loss, disturbance, or mortality are expected. The EIAR notes that no new impacts on biodiversity are anticipated during the decommissioning phase.

### 7.11.39. Cumulative Effects

7.11.40. The EIAR states that cumulative impacts from multiple developments may be additive or associated, leading to significant effects. The EIAR details other wind farm developments, noting no significant negative residual effects on ecological receptors for any of these projects, including Ardderroo Wind Farm (27m west), Galway Wind Park (GWP) Cloosh (4.3km west), GWP Uggool (2.6km northwest), GWP Seecon (5.2km southwest), Lettercraffroe (7.3km northwest), Knockalough (3km south), Leitir Gungaid (6.9km south-southeast), and Letterpeck (5.3km south). The EIAR indicates that no significant cumulative impacts are identified with non-wind farm projects such as the N59 Maigh Cuilinn Bypass and the Connemara Greenway. The EIAR details various small-scale projects and forestry felling operations, concluding no potential for significant cumulative impacts. The EIAR posits that following mitigation, the Knockranny proposal would not result in any net loss of ecologically significant habitat or significant disturbance to faunal species. Therefore, the EIAR concludes that no

residual cumulative impacts on biodiversity are likely during the construction, operational, or decommissioning phases.

#### 7.11.41.Assessment

- 7.11.42. Having regard to the development permitted under ABP. Ref. PL07.243094 to which the proposed development is seeking alterations, I note that the Planning Inspector addressed the ecological concerns raised by the appellants, including impacts on the marsh fritillary butterfly, Kerry Slug, salmon and their spawning grounds, red grouse, and bats. The Inspector highlighted that the applicant provided adequate mitigation measures in the EIS and additional surveys where necessary. The IFI's consultation confirmed no detrimental effects on river systems. The concerns about the marsh fritillary were mitigated by surveying the host plant, Devil's-bit scabious. The Kerry Slug was not a recorded species on-site, and the Red grouse were addressed through an NPWS management plan. The Bat Survey was deemed sufficient as no lesser horseshoe bats were found on-site. While the appellants did not provide expert evidence to support their claims, the Inspector concluded that the applicant adequately addressed the ecological matters, excluding the Appropriate Assessment, which is detailed further in the report.
- 7.11.43. Under the current application, I note the Planning Authority considered biodiversity impacts, with updated surveys indicating no significant adverse effects on key species and habitats, provided mitigation measures such as sediment control and forestry buffers are implemented. Despite identifying potential impacts on bats due to collision risks, the Planning Authority concluded that with appropriate mitigation, the proposed development would not result in significant additional adverse impacts compared to the permitted development.
- 7.11.44. I have examined, analysed, and evaluated Chapter 9 of the EIAR, all of the associated documentation, and submissions on file in respect of Biodiversity. This includes the Aquatic Ecological Impact Assessment Report (Appendix 9.2), Interpretation of Bat Results Report (Appendix 9.3), Ornithological Desktop Study and Survey Methodology Report (Appendix 10.1) and Collision Risk Assessment (Appendix 10.3). I have also taken into consideration the third-party appeal submissions and observations expressing concerns regarding the potential impacts on biodiversity due to the proposed amendments to the permitted wind farm. These

concerns include significant risks to local wildlife and biodiversity, potential negative impacts on avian and bat populations, local flora and fauna, sensitive ecological areas, habitat disruption and fragmentation, and effects on local water bodies and soil.

- 7.11.45. It is my view that the direct and indirect effects of the proposed project on biodiversity have been comprehensively assessed. The primary direct impacts include habitat loss due to increased turbine tip height, additional tree felling, and construction activities, which may affect local flora, fauna, and aquatic ecosystems. Indirect impacts include potential changes to water quality and hydrology due to increased sedimentation and pollutant runoff. The EIAR's assessment methodology, which included field surveys, habitat classification, and ecological impact evaluations, is robust and adheres to relevant guidelines and standards.
- 7.11.46. I consider that the mitigation measures proposed, including sediment control, forestry buffers, and specific construction best practices, are comprehensive and robust. These measures are designed to effectively minimise adverse impacts on biodiversity. Specifically, the use of sediment control measures, such as silt fencing and settlement systems, would prevent sediment runoff into watercourses, thereby protecting aquatic habitats and species. Forestry buffers would provide essential protection for sensitive habitats, reducing the risk of habitat fragmentation and preserving connectivity for wildlife movement. The adherence to best practices in construction, including limiting the open trench length and ensuring timely backfilling, would mitigate disturbances to local fauna and flora.
- 7.11.47. It is my view that, with the implementation of these measures (as detailed further above), the project would not result in significant adverse effects on habitats and species. The EIAR indicates that these mitigations would ensure there are no significant adverse effects on designated sites, such as the Connemara Bog Complex SAC and Ross Lake and Woods SAC, or on key species like bats, otters, and amphibians. For instance, maintaining a 50m buffer zone around turbine locations would minimise collision risks for bats, while specific lighting restrictions would prevent disturbance to nocturnal species. This issue is addressed in further detail in the Appropriate Assessment below. The pre-construction surveys for amphibians and mammals, coupled with the translocation of any found individuals, would further safeguard these species during the construction phase.

7.11.48. I have assessed the potential cumulative impacts of the proposed development in conjunction with other existing and proposed projects in the area. Having evaluated the information presented in the EIAR and considering the interactions between this project and other wind farms, as well as non-wind farm developments, I consider that there would be no significant cumulative effects on biodiversity. The evidence indicates that the mitigation measures for each project are sufficient to prevent significant residual impacts when considered collectively. This includes measures to protect key species and habitats from the combined pressures of multiple developments. Therefore, I consider that the proposed development, in combination with other projects, would not lead to adverse cumulative impacts on the local biodiversity.

#### 7.11.49. **Conclusion**

7.11.50. I conclude that the proposed project, subject to the implementation of the specified mitigation measures, would not result in significant adverse effects on biodiversity. The impacts identified, including habitat loss and potential disturbances to species, are likely to occur but would not be significant due to the proposed mitigation measures. These measures would effectively prevent any long-term negative impacts on the environment.

# 7.12. Ornithology

### 7.12.1. Issues Raised

7.12.2. Third-party appeal submissions express concerns regarding ornithology. Key issues raised include the inadequate assessment of the cumulative impacts of the proposed wind farm on bird populations, particularly the golden plover. A submission highlights that Chapter 10 of the EIAR fails to comprehensively address the incremental negative impact of larger turbines on the ornithological population at the site. Additionally, it is submitted that the EIAR does not provide sufficient details on the cumulative effects of the proposed development in conjunction with existing operational wind farms. Concerns are also raised about the accuracy and completeness of the survey data used in the ornithological assessment, with third parties stressing the need for

thorough, up-to-date surveys to ensure accurate impact predictions and effective mitigation measures.

### 7.12.3. Assessment Methodology

- 7.12.4. The EIAR states that the assessment followed the Scottish Natural Heritage (SNH) guidelines, particularly the 'Recommended bird survey methods to inform impact assessment of onshore wind farms' (2017). The report asserts that this guideline is considered the industry standard in Ireland due to the lack of local guidelines. The EIAR details modifications to these guidelines to suit the Irish context, such as adjusting target species and survey designs.
- 7.12.5. The EIAR describes that desk studies used various sources, including the NPWS natural heritage database, Birdwatch Ireland sensitivity maps, and the NBDC database for records of rare and protected species. Field studies, conducted between February 2022 and March 2023, involved vantage point (VP) surveys and distribution and abundance surveys to collect data on bird activity. The EIAR notes that these surveys adhered to SNH guidance, with four VP locations selected to cover the proposed development site, ensuring comprehensive visibility and data collection. Criteria for identifying target species included references to Annex I of the Birds Directive, the Wildlife Acts, and red-listed species of conservation concern in Ireland. The EIAR indicates that specific species, such as Hen Harrier, were given particular focus, with detailed methods for both winter roost and breeding season surveys. The EIAR details that all surveys were performed by qualified personnel and followed best practices to minimise disturbance to bird species.
- 7.12.6. The EIAR describes that the impact assessment for the proposed wind farm was based on the data collected from desk studies and field surveys, following the methodology set out in EPA (2022) and CIEEM (2018) guidelines, with reference to BS 42020:2013. The EIAR states that the ecological impact assessment (EcIA) uses a source-pathway-receptor model to evaluate potential impacts on identified ecological features. A significant effect is defined as one that supports or undermines biodiversity conservation objectives for important ecological features.
- 7.12.7. The EIAR indicates that avifauna was evaluated using criteria from Percival (2003) and SNH (2017) to assign sensitivity levels to bird species. Species' sensitivity levels were categorised as very high, high, medium, or low, based on their ecological

importance and protection status. The EIAR posits that potential effects on avifauna are assessed by considering both the magnitude of the predicted effect and the sensitivity of the species affected. Magnitude levels are classified from very high to negligible, based on the percentage of population or habitat potentially lost or altered.

7.12.8. The significance of potential effects is then determined by cross-referencing the magnitude of effects with species sensitivity, using a significance matrix developed by Percival (2003). This approach helps predict the significance of each potential impact on bird populations, with higher significance ratings indicating more serious potential effects. For collision risk, the EIAR notes that the proposed turbines (Vestas V136 and Enercon 138) have hub heights of 81m or 82m and swept heights ranging from 12m to 150m, which are used to calculate potential collision heights.

### 7.12.9. Baseline Conditions

- 7.12.10. The EIAR details the baseline environment for ornithology, focusing on Natura 2000 designated sites within a 20 km radius of the proposed development. The EIAR states that three Special Protection Areas (SPAs) were identified: Lough Corrib SPA, Inner Galway Bay SPA, and Connemara Bog Complex SPA. The EIAR notes remote indirect connectivity to Lough Corrib SPA via streams, while connectivity to Inner Galway Bay SPA is tenuous and indirect. No connectivity is identified for the Connemara Bog Complex SPA.
- 7.12.11. The EIAR describes three Important Bird and Biodiversity Areas (IBAs) within 20 km: Connemara Bogs, Lough Corrib, and Inner Galway Bay. The EIAR indicates that Connemara Bogs support significant populations of Golden Plover and Merlin. Lough Corrib and Inner Galway Bay are important for various waterfowl and seabirds. The EIAR identifies two Ramsar sites within 20 km: Lough Corrib and Inner Galway Bay, both critical for species like Common Scoter, Golden Plover, and breeding terns. The EIAR mentions the BirdWatch Ireland Bird Sensitivity Mapping Tool, noting no specific bird sensitivity ratings assigned to the proposed site area.
- 7.12.12. Six Irish Wetland Bird Survey (I-WeBS) sites are within 20 km, including Lough Corrib and Lough Poll, important for monitoring non-breeding bird populations. Bird Atlas records for the hectad M13, where the site is located, show the presence of species such as Barn Owl, Black-headed Gull, and Golden Plover. An NPWS

information request revealed no specific records for protected bird species within the hectad M13 but noted an occupied Peregrine Falcon nest in the area.

- 7.12.13. The EIAR summarises previous ornithological surveys, recording 26 breeding species, including Red-listed Golden Plover and Red Grouse, and 29 winter species, including Red Grouse and Whooper Swan. Key observations include evidence of breeding Red Grouse and sightings of Golden Plover and Kestrel.
- 7.12.14. The EIAR outlines the identification of target species based on past records and specific selection criteria, including legislative protection and the likelihood of being affected by the proposed development. Target species, typically comprising those with higher legislative protection, are restricted to those likely to be impacted by the development site. Additionally, other species potentially sensitive to the site were included as secondary species. The EIAR includes species such as Arctic Tern, Barn Owl, Buzzard, Common Scoter, Common Tern, Curlew, Golden Plover, Hen Harrier, Kestrel, Lapwing, Long-eared Owl, Merlin, Peregrine Falcon, Pochard, Red Grouse, Redshank, Sandwich Tern, Shoveler, Snipe, Sparrowhawk, White-tailed Eagle, Whooper Swan, and Woodcock.
- 7.12.15. The conservation status of these species varies, with many listed under Annex I of the EU Birds Directive, the Wildlife Acts, and the BoCCI Red list. Habitats range from coastal breeding sites, freshwater lakes, moorlands, and blanket bogs to farmland and forests. Wintering habitats often include coastal areas, inland wetlands, and damp fields. The EIAR provides specific breeding and wintering information for each species, highlighting their ecological requirements and distribution. The EIAR details that a total of nine target species and seven secondary interest species were recorded during field surveys from February 2022 to March 2023. Observations of each target species are summarised, with detailed survey data and maps provided in Appendix 10.2.
- 7.12.16. White-tailed Eagle was recorded on three occasions in February 2022 at VP1 and VP3, with two flights within potential collision height (PCH) and one perching record. Kestrel was observed 129 times, with most flights within the PCH, especially in June and July 2022. Sparrowhawk was seen eight times, all within PCH. Hen Harrier was observed three times, all within PCH. Peregrine Falcon was observed twice within PCH. Snipe was recorded 15 times, mainly low over bog, grassland, and moorland

habitats, with breeding indications noted. Red Grouse was observed on four occasions, none within PCH, with additional records during winter walkovers. Golden Plover was recorded five times, mostly in winter, with the largest flock containing 108 birds. Whooper Swan was observed once during VP surveys, and additional observations were made during waterbird counts.

- 7.12.17. Secondary interest species included Cormorant, recorded three times within PCH and multiple times during other surveys; Mallard, recorded 12 times, all below PCH, and during waterbird counts; Common Gull, recorded twice, with one flight within PCH; Common Sandpiper, observed feeding once; Grey Heron, observed twice within PCH and during other surveys; Teal, recorded four times during VP surveys and multiple times during other surveys; and Mute Swan, recorded during waterbird and hinterland surveys but not during VP surveys.
- 7.12.18. Vantage Point surveys documented 15 species of interest, including the target species and secondary species. Raptors observed included Hen Harrier, Kestrel, Sparrowhawk, White-tailed Eagle, and Peregrine Falcon. Non-raptors observed included Golden Plover, Grey Heron, Mallard, Lesser Black-backed Gull, Common Gull, Cormorant, Red Grouse, Snipe, Teal, and Whooper Swan.
- 7.12.19. The waterbird count survey recorded seven secondary species and one target species in March 2022. Hen Harrier roost surveys conducted in 2022 and 2023 reported no sightings. Winter walkover surveys documented two secondary species and three target species, while hinterland surveys recorded seven secondary species and two target species. Incidental sightings outside designated survey periods included observations of Snipe, Red Grouse, and Golden Plover.
- 7.12.20. The EIAR details the ecological evaluation of target species and species of secondary interest within the likely zone of influence. It assesses bird sensitivity and estimates national population sizes, following criteria developed by Percival (2003) and NRA guidelines.
  - Common Gull: The EIAR states that the estimated national wintering population is 1,948. The maximum count of twenty birds recorded at the site indicates local importance. Sensitivity: Very High (Amber listed, SCI species).
  - Common Sandpiper: The EIAR describes a breeding population of 1,848. A single observation at the site indicates local importance. Sensitivity: Low (Amber listed).

- Cormorant: The EIAR notes a national wintering population of 7,967, with a maximum of three birds recorded at the site, indicating local importance. Sensitivity: Very High (Amber listed, SCI species).
- Golden Plover: The EIAR details a national wintering population of 99,870, with a maximum of 108 birds recorded, indicating local importance. Sensitivity: Very High (SCI species, Annex I EU Birds Directive, BoCCI Red listed, Wildlife Acts).
- Grey Heron: The EIAR puts forward a breeding population of 3,087, assigning the local population high value. Sensitivity: Very High (SCI species).
- Hen Harrier: The EIAR indicates a national wintering population of 269-349. Three observations at the site suggest national importance. Sensitivity: Very High (SCI species, Annex I EU Birds Directive, BoCCI Amber listed, IV Schedule Wildlife Acts).
- Kestrel: The EIAR details a breeding population of 12,100-12,220. Observations at the site indicate local importance. Sensitivity: High (BoCCI Red-listed, IV Schedule Wildlife Act).
- Mallard: The EIAR notes a breeding population of 15,400. Local population assigned high value. Sensitivity: Very High (Amber listed, SCI species).
- Mute Swan: The EIAR describes a breeding population of 3,560, assigning local population low value. Sensitivity: Low (Amber listed).
- Peregrine Falcon: The EIAR states a national breeding population of 515. Two observations suggest national importance. Sensitivity: Very High (Annex I EU Birds Directive, BoCCI Green listed, IV Schedule Wildlife Act).
- Red Grouse: The EIAR details a breeding population of 1,708-2,116, indicating local importance. Sensitivity: High (BoCCI Red-listed, Wildlife Acts).
- Snipe: The EIAR notes a breeding population of 4,275, with local importance assigned. Sensitivity: High (BoCCI Red-listed, Wildlife Acts).
- Sparrowhawk: The EIAR describes a green-listed species, assigning local importance. Sensitivity: Low (IV Schedule Wildlife Act).
- Teal: The EIAR states a breeding population of 29,050, assigning local importance. Sensitivity: Very High (Amber listed, SCI species).

- White-tailed Eagle: The EIAR indicates recent reintroduction with ten pairs holding territories. Assigned international importance. Sensitivity: High (ecologically sensitive, Annex I EU Birds Directive, BoCCI Red listed, IV Schedule Wildlife Act).
- Whooper Swan: The EIAR notes a national wintering population of 10,520. The maximum count of five birds suggests local importance. Sensitivity: Medium (Annex I EU Birds Directive, BoCCI Amber listed, Wildlife Acts).

#### 7.12.21. **Potential Effects**

- 7.12.22. The EIAR states that the construction phase impacts of the proposed development on avifauna have been assessed based on amendments to the previously approved project. The report indicates that no significant changes to the findings or mitigation measures from the original Environmental Impact Statement (EIS) are necessary. The EIAR describes that alterations to the turbine dimensions, additional tree felling, and infrastructure changes have been evaluated for their potential effects on bird species.
- 7.12.23. The EIAR details that a screening assessment for Appropriate Assessment was conducted for the permitted ABP Ref 07.243094, whereby the Board concluded that the proposed development would not adversely affect the integrity of European sites, such as the Connemara Bog Complex SAC, Ross Lake and Woods SAC, and Lough Corrib SPA.
- 7.12.24. With regards to habitat loss, the proposed development would require the removal of c.2.45ha conifer plantation and c.0.72ha scrub. The EIAR indicates that the potential effects on key ornithological receptors have been thoroughly assessed. For Common Gull, the EIAR notes that no significant habitat loss or displacement effects are anticipated, with an overall effect significance assessed as low. Similarly, for Cormorant, the EIAR states that there would be no significant habitat loss or displacement effects, with a long-term imperceptible impact. For Golden Plover, the EIAR posits that while suitable breeding habitat is present, all observations were recorded in winter, and no significant adverse effects from displacement are anticipated. The EIAR assesses the impact significance as low. The EIAR describes that Grey Heron, Hen Harrier, Kestrel, Mallard, Mute Swan, Peregrine Falcon, Red Grouse, Snipe, Sparrowhawk, Teal, White-tailed Eagle, and Whooper Swan will not experience significant adverse effects due to the proposed development. For each

species, the EIAR notes that habitat loss would be negligible, and displacement effects would be minimal or imperceptible, with overall effect significance rated as very low to low.

- 7.12.25. The EIAR states that the potential operational phase effects on avifauna primarily concern the increase in turbine tip height. The EIAR describes that collision, disturbance displacement, habitat loss or damage, and barrier effects are the main impact categories for wind energy developments on birds. The EIAR details that collision risk for raptors such as Kestrel, Sparrowhawk, White-tailed Eagle, Hen Harrier, and Peregrine Falcon is low, with calculated annual collision risks being 7.02-7.13 for Kestrel and 0.04 or less for the other raptors, depending on the turbine, indicating a long-term imperceptible adverse effect.
- 7.12.26. For non-raptors, the EIAR notes that snipe, red grouse, and golden plover were observed within the potential collision risk zone. The collision risk for Golden Plover is calculated at 21.5-21.8, representing a medium effect significance and a long-term moderate adverse effect on the local population. Other non-raptors like whooper swan, cormorant, grey heron, and common gull were recorded infrequently, with a low collision risk. Mallard and teal showed no collision risk as they were observed flying below the potential collision risk height.
- 7.12.27. The EIAR posits that disturbance displacement would not significantly affect key ornithological receptors and habitat loss or damage is also not anticipated to cause significant adverse effects. Barrier effects are deemed negligible due to the turbine layout, providing ample flight corridors for avifauna. The EIAR concludes that the proposed development would not result in significant adverse effects on key ornithological receptors due to collision risk, disturbance displacement, habitat loss, or barrier effects. The decommissioning phase is not expected to introduce any new impacts on avifauna.

#### 7.12.28. Mitigation Measures

7.12.29. The EIAR describes the mitigation measures for avifauna during the construction, operational, and decommissioning phases of the proposed wind farm development. The EIAR states that all construction phase mitigation for avifauna would follow the measures set out in the EIS for the Permitted Development, including:

- Implementation of a Red Grouse Management Plan, with an ecological officer monitoring the construction phase.
- Felling of conifers outside the breeding bird season if possible.
- Implementation of habitat restoration measures to offset habitat loss.
- Minimising damage or loss of wet heath/blanket bog habitats by demarcating the site and restricting access.
- Implementation of an agreed bird monitoring programme, including vantage point surveys, Red Grouse surveys, and breeding bird transects.
- 7.12.30. The EIAR describes that all operational phase mitigation and monitoring would follow the EIS for the Permitted Development. This includes monitoring residual impacts on birds and the effectiveness of mitigation measures through:
  - Winter and summer vantage point surveys.
  - Merlin surveys.
  - Breeding transect surveys.
  - Red Grouse surveys.
  - Flight Activity Surveys during years 1, 2, 3, 5, 10, and 15 post-construction to record any barrier effect and changes in flight heights of key receptors.
- 7.12.31. The EIAR states a comprehensive fatality monitoring programme would be undertaken during years 1, 2, 3, 5, 10, and 15 post-construction, including:
  - Initial carcass removal trials to establish predator removal rates, ensuring no turbines used for these trials are used for subsequent fatality monitoring.
  - Turbine searches for fatalities with a search area radius of 150m around turbine bases, conducted at intervals based on carcass removal rates.
  - A standardised approach to searches, possibly including control groups and varying search techniques, to robustly estimate post-construction collision fatality impact.
  - Calibration of recorded fatalities against predator removal rates to estimate overall fatality rates.

# 7.12.32. Residual Effects

7.12.33. The EIAR notes that no significant residual impacts on avifauna are anticipated during the construction and decommissioning phases. During the operational phase, with the implementation of mitigation, the EIAR considers that the proposed development would have a slight to imperceptible residual impact on birds.

#### 7.12.34. Cumulative Effects

- 7.12.35. The EIAR states that cumulative impacts from multiple developments may be additive or synergistic, potentially leading to significant effects. The EIAR details cumulative assessments with nearby wind farms, including Ardderroo, Galway Wind Park, Uggool, Seecon, Lettercraffroe, Knockalough, Leitir Gungaid, and Letterpeck, all of which recorded species such as Golden Plover, Red Grouse, and various Annex I species. The EIAR indicates that no significant residual impacts on avian receptors were identified in these projects.
- 7.12.36. The EIAR posits that other non-wind farm projects, including the N59 Maigh Cuilinn Bypass Road Project and Connemara Greenway, show no potential for significant cumulative impacts. Additionally, ongoing felling operations in the area are not expected to result in significant cumulative impacts. The EIAR concludes that there are no potentially significant residual cumulative effects on collision risk, disturbance, displacement, habitat loss, or barrier effects for key ornithological receptors. The predicted residual effects of the proposed development, combined with other projects, are not anticipated to result in significant cumulative impacts on avifaunal features.

### 7.12.37. Assessment

7.12.38. Having regard to the development permitted under ABP. Ref. PL07.243094 to which the proposed development is seeking alterations, I note that the Planning Inspector identified several key issues regarding ornithology in the initial assessment. The EIA chapter on ornithology assessed potential impacts on birds and their habitats, particularly focusing on Red-listed species recorded at the site, including Golden Plover and Red Grouse. Bird surveys conducted during various seasons recorded several bird species, with the likely significant impacts identified as habitat loss, disturbance or displacement during construction, and collision risks during operation. Despite the EIS stating a low collision risk for the species considered and proposing mitigation measures such as careful planning, habitat restoration, and a Red Grouse

Management Plan, the Inspector expressed concerns about the potential significant residual impact on birds, particularly due to collision risks during the operational phase. The Appropriate Assessment highlighted potential risks to European sites, particularly regarding the Golden Plover, and concluded that the applicant had not proven beyond reasonable scientific doubt that the development would not adversely affect the integrity of these sites. Consequently, the Inspector found the proposed mitigation measures insufficient to address the potential significant impacts on key ornithological receptors and recommended that the proposed development be refused permission on the grounds that the site lies within 15km of 10 statutorily designated European sites and hosts bird species listed as of Special Conservation Interest in nearby SPAs. The Inspector was not satisfied that an appropriate or adequate assessment of the effects of the development had been carried out in accordance with Article 6(3) of the EU Habitats Directive, nor that the integrity of the SACs and SPAs would not be adversely affected, particularly concerning the Golden Plover. Thus, the proposed development would contravene policy HL31 of the Galway County Development Plan 2009-2015 and would be contrary to the proper planning and sustainable development of the area.

- 7.12.39. Notwithstanding the Inspector's recommendation, the Board granted permission for the proposed development, considering national policy on sustainable energy, compliance with the Wind Farm Planning Guidelines, alignment with the Galway County Development Plan, the site's characteristics and surrounding landscape, the pattern of development in the area, mitigation measures, planning history, and submissions received. The Board concluded that the development would not have significant negative effects, and the concerns regarding impacts on birds, particularly the Golden Plover, had been satisfactorily addressed by the applicant.
- 7.12.40. Under the current application, I note the Planning Authority assessed the likely significant effects on ornithology, particularly focusing on potential impacts on bird species such as the Golden Plover, Hen Harrier, and Common Gull. The Planning Authority concluded that, with the implementation of construction and operational phase mitigation measures—including a Red Grouse Management Plan, construction outside the breeding season, and ongoing monitoring—the proposed development would have a slight to imperceptible residual impact on birds. They required a Stage 2 Appropriate Assessment, submitted with a Natura Impact Statement and an updated

Environmental Impact Assessment Report. Despite concerns regarding potential negative impacts on designated Natura 2000 sites, the Planning Authority concluded that the proposed development, either individually or in combination with other plans and projects, would not adversely affect the integrity of these sites during either the construction or operational phase.

- 7.12.41. In view of the above, I have examined, analysed, and evaluated Chapter 10 of the EIAR, all associated documentation including the Ornithological Desktop Study and Survey Methodology Report (Appendix 10.1) and Collision Risk Assessment (Appendix 10.3), and submissions on file in respect of ornithology. It is my view that the direct effects of the proposed wind farm on ornithology primarily involve potential habitat loss, disturbance or displacement during construction, and collision risks during operation. The EIAR provides comprehensive data indicating low collision risks for most bird species considered, with calculated collision risks for key species like Golden Plover, Kestrel, and Hen Harrier remaining within acceptable limits.
- 7.12.42. I am of the view that the proposed mitigation measures would address potential impacts effectively. Habitat restoration measures, such as reseeding disturbed areas and restoring wet heath and blanket bog habitats, would ensure that any lost habitat is replaced, providing continuous support for bird species. During the construction phase, areas would be demarcated, and access restricted to minimise disturbance to surrounding habitats, with machinery kept on roads and hardstanding areas to prevent damage to sensitive habitats. The EIAR specifies that disruptive activities, including the felling of conifers, would take place outside the breeding bird season whenever possible, reducing the risk of disturbing nesting birds. The implementation of a Red Grouse Management Plan, including monitoring by an ecological officer, would ensure protection throughout the construction phase. Turbine design features, such as slower rotation speeds and larger rotor diameters, would reduce the likelihood of bird collisions. A comprehensive bird monitoring program, including vantage point surveys, flight activity surveys, and breeding bird transects, would be implemented during the operational phase, allowing for adaptive management based on real-time data.
- 7.12.43. For specific key species like the Golden Plover, although recorded on the site, no evidence of breeding was found, and all observations were during the winter. The mitigation measures, including habitat restoration and careful monitoring, would ensure that the risk to this species is managed effectively. For raptors like the Hen

Harrier and Kestrel, the EIAR assesses the collision risk as low, with calculated annual collision risks being 7.02-7.13 for Kestrel and 0.04 or less for Hen Harrier. These low risks would be further mitigated by ongoing monitoring and adaptive management strategies.

- 7.12.44. I consider that the indirect effects, such as potential changes in bird behaviour and displacement due to increased turbine height, have been thoroughly assessed. The EIAR's reliance on industry-standard guidelines and extensive field surveys supports the conclusion that these indirect effects are minimal. The implementation of the Red Grouse Management Plan and other mitigation measures, such as habitat restoration and restricting construction activities to non-breeding seasons, would further minimise these impacts.
- 7.12.45. I consider that the cumulative effects of the proposed development, in conjunction with existing and permitted wind farms, have been adequately considered. The EIAR's assessment of cumulative impacts indicates that while there is a presence of multiple wind farms within the vicinity, the strategic layout and spacing of turbines mitigate significant cumulative adverse effects on bird populations.
- 7.12.46. Regarding residual impacts, I concur with the EIAR that with the proposed mitigation measures, the residual impacts on avifauna would be slight to imperceptible. The ongoing monitoring programs, including vantage point surveys and flight activity surveys, would ensure that any unforeseen impacts are promptly identified and addressed.
- 7.12.47. In response to the concerns raised in the submissions, particularly about the adequacy of survey data and the cumulative impacts on the Golden Plover, it is my view that the comprehensive nature of the field surveys and the adherence to best practice guidelines address these concerns sufficiently. The EIAR demonstrates that the proposed mitigation measures are robust and that the monitoring programs would provide ongoing data to ensure the protection of avifauna.

### 7.12.48. **Conclusion**

7.12.49. I conclude that the effects identified in the EIAR are likely to occur, but they are not significant enough to impact the environment adversely. The proposed mitigation measures and ongoing monitoring would effectively minimise potential significant effects on ornithology. Therefore, I find that the proposed development, as outlined and with the mitigation measures in place, would not have significant negative effects on ornithology, either directly or indirectly.

## 7.13. Archaeology and Cultural Heritage

#### 7.13.1. Issues Raised

- 7.13.2. I note the third-party appeal submissions and observations received expressing concerns regarding archaeology and cultural heritage. The submissions highlight how the proposed wind farm site is located in an area classified as "Not Normally Permissible" in the Galway County Development Plan 2022-28, which raises concerns about potential impacts on archaeological and cultural heritage sites. It is asserted that the classification is due to factors like environmental sensitivity and the area's historical significance, suggesting that the wind farm development may undermine these aspects.
- 7.13.3. Concerns are also raised about the adequacy of the archaeological assessments conducted. The appellants argue that the EIAR lacks comprehensive surveys and fails to adequately assess the potential impacts on undiscovered archaeological sites within the proposed development area. The historical and cultural value of the landscape, including any potential subsurface archaeology, has not been thoroughly investigated or documented. Furthermore, the submissions question the thoroughness of the consultation process with relevant heritage bodies and local communities. There is a call for more detailed and updated archaeological impact assessments to ensure that any potential adverse effects on cultural heritage are fully understood and mitigated. The importance of preserving the archaeological integrity and cultural heritage of the area is emphasised, with recommendations for rigorous protective measures and continuous monitoring throughout the development process.

### 7.13.4. Assessment Methodology

7.13.5. I note that the EIAR states the assessment methodology for archaeology and cultural heritage involved a comprehensive desk-based review of archaeological, historical, cultural, and cartographic sources. The EIAR describes the primary study area as the northwest limits of Knockranny townland, with a 5km archaeological assessment
radius and a broader 10km radius for National Monuments in State Care. The EIAR notes that the study included a walkover survey of the proposed underground cabling route conducted in April 2023.

7.13.6. The EIAR details the sources examined, including the Sites and Monuments Records (SMR) and Record of Monuments and Places (RMP), which list and classify recorded monuments. The National Monuments in State Care Database was reviewed for monuments under state protection, while the National Inventory of Architectural Heritage (NIAH) and the Record of Protected Structures (RPS) were consulted for post-1700 AD structures of significance. The Galway County Development Plan 2022-2028, including Chapter 12 on heritage and appendices on Protected Structures and Conservation Areas, was also examined. Additionally, the EIAR states that topographic files from the National Museum of Ireland and excavation summaries from the Excavations Bulletin were assessed. Placename studies, historic maps, and various aerial photographs were reviewed to understand the historical and topographical context.

# 7.13.7. Baseline Conditions

- 7.13.8. The EIAR states that within a 10km radius of the site, there is one National Monument and four recorded monuments within the EIAR study area, including one within the planning boundary of the proposed development. The EIAR notes over eighty recorded monuments in the wider 5km study area, which includes a well-preserved 19th-century farming landscape with farm clusters typical of upland Connemara.
- 7.13.9. The EIAR details that the underground electrical and communications cabling connecting the 11 wind turbines to the Ardderroo substation will traverse various townlands, with the route involving new access tracks, existing roads, and widened access roads. No recorded monuments or previously unrecorded archaeological features were noted along the proposed ducting route during the walkover survey.
- 7.13.10. The EIAR indicates there are no National Monuments in state ownership or guardianship within the study area, though Aughnanure Castle, located c. 7km north of the proposed turbines, is within the 10km study area. The EIAR describes the castle as a 16th-17th century tower house with associated bawns, turrets, and other structures. Four recorded monuments within the EIAR study area include a children's burial ground, a hut site, a cairn, and a cist. The children's burial ground, located near

Turbine 6, was identified based on local information with no visible surface trace. The hut site, situated west of the burial ground, consists of a C-shaped low earthen bank. The cairn and cist are on the eastern limits of the study area, with the cairn described as a small circular ring-cairn with a modern drystone-built cairn at its centre.

- 7.13.11. The EIAR details that within the wider 5km study area, there are eighty-five Recorded Monuments spanning prehistoric to post-medieval times, including cairns, standing stones, megalithic structures, ringforts, enclosures, crannogs, bullaun stones, churches, children's burial grounds, designed landscape features, and other post-medieval structures. The prehistoric period is represented by six cairns, one standing stone, and a single megalithic structure. The early medieval period includes ringforts, enclosures, crannogs, and bullaun stones. The high medieval period is marked by churches, while the post-medieval period includes children's burial grounds and designed landscape features.
- 7.13.12. The EIAR notes no previous licensed archaeological works within the study area, and the closest archaeological work was monitoring associated with the Galway Wind Park development, which yielded negative results. The EIAR also reports no stray artefact finds within the study area.
- 7.13.13. The EIAR states there are no Protected Structures or National Inventory of Architectural Heritage (NIAH) structures within the study area. The closest protected structure is Ross Railway Station, located c. 3.2km north of the permitted turbines. The EIAR also examines historical mapping, noting several vernacular structures within the study area, including two conjoined settlements and several stone boundary walls dating to the post-medieval period.

# 7.13.14. **Potential Effects**

- 7.13.15. The EIAR indicates that in the do-nothing scenario, the permitted development would proceed with no additional significant impacts beyond those already assessed. During construction, the EIAR states there would be no indirect effects on the visual setting of cultural heritage assets as these are considered operational effects.
- 7.13.16. The EIAR details that direct effects during construction involve potential physical impacts on monuments and archaeological features. The proposed development includes changes such as increased turbine height and additional

infrastructure within the footprint of the permitted hardstand areas. No national monuments would be directly impacted, with the nearest being Aughnanure Castle, 7km north.

- 7.13.17. The EIAR notes four recorded monuments within the study area: a children's burial ground, a hut site, a cairn, and a cist. The children's burial ground, located near Turbine 6, may experience slight to moderate physical impact due to construction. The hut site and cairn would not be physically impacted as they are located outside the planning boundary. There are no recorded monuments along the proposed underground cabling route, so no impacts are anticipated.
- 7.13.18. The EIAR posits that previously unrecorded archaeological features within the study area may experience slight physical impacts due to the poor quality of the land. The report states that no Protected Structures or NIAH structures would be directly impacted, with the closest being Ross Railway Station, 3.2km north. Cultural heritage sites, including the Cloghvally 'B' vernacular settlement and a single house near Turbine 13, may experience slight to not significant physical impacts. There would be moderate physical impacts on two townland boundaries along the cabling route, specifically at Letter-Ardderroo and Ardderroo-Knockranny boundaries.
- 7.13.19. During the operational phase, the EIAR describes indirect impacts primarily involving visual changes. The increased turbine heights may have a slight visual impact on Aughnanure Castle, though the effect is considered not significant due to distance and tree coverage. The children's burial ground, hut site, and cairn would not experience significant visual impacts.
- 7.13.20. Within the 5km study area, the EIAR notes 85 recorded monuments, with most classified as having not significant to slight visual impacts due to their low physical manifestation or distance from the turbines. The visual impact on vernacular settlements is classified as slight to moderate, and the impact on townland boundaries as not significant. No visual impacts are anticipated on protected structures or NIAH structures, with the nearest being Ross Railway Station, 3.2km to the north.

### 7.13.21. Mitigation Measures

- 7.13.22. The EIAR indicates that no significant impacts requiring mitigation are anticipated from the proposed development. However, it outlines the following best practice measures from the original permitted development EIS, as follows:
  - The stone field walls removed for access roads to Turbines 7 and 11 should be excavated by a qualified archaeologist prior to construction.
  - The topsoil removal for the access road to Turbine 11 should occur under archaeological supervision due to potential artefactual material from past spade cultivation.
  - The ground works and topsoil removal at Turbine 6 should be closely supervised by an archaeologist given the possible presence of a children's burial ground (GA067-033) nearby.
  - All topsoil removal during the construction phase, particularly for turbine foundation platforms, access roads, and the grid connection, should be monitored by a qualified archaeologist under a license from the National Monuments Service (NMS). Provisions should be made for rapid excavation of any archaeological evidence uncovered.
  - That an archaeologist be present during trench excavation for the underground grid connection cable route.
- 7.13.23. The EIAR states that a report on the results of any licensed monitoring should be submitted to the National Monuments Service and Galway County Council upon completion.
- 7.13.24. During the operational phase, the EIAR indicates no specific mitigation requirements but advises protecting architectural and cultural heritage components from encroaching vegetation as part of routine landscape management. Targeted fenced grazing may be considered appropriate around settlement archaeology. The EIAR states that no new archaeological or cultural heritage impacts are expected during the decommissioning phase.

# 7.13.25. **Residual Effects**

7.13.26. The EIAR states that with the identified mitigation measures in place, the proposed development would not have residual negative significant impacts on the

archaeology or cultural heritage of the study area. During the construction phase, any potential direct impacts would be mitigated through appropriate measures, resulting in residual impacts classified as 'slight' and 'not significant.' The EIAR indicates that there would be no significant residual impacts during the operational phase.

# 7.13.27. Cumulative Effects

7.13.28. The EIAR details that cumulative impacts involve potential combined effects from other developments alongside the proposed development, noting nine wind farms within c.10 km, including the Ardderroo Wind Farm under construction to the west. It considers transport, domestic, agricultural projects, forestry, peat, and other activities in the area. During the construction phase, the EIAR states that no significant cumulative effects are anticipated, as the proposed development would be part of the Knockranny Wind Farm Project, which has been assessed previously and found not to have adverse impacts. In the operational phase, the EIAR notes that the underground electrical and communications cabling would not result in visual effects or compound effects on known archaeology. The report states that the increase in turbine scale would not contribute to significant cumulative impacts, and all cumulative effects are considered not significant. During the decommissioning phase, the EIAR describes minimal soil disturbance, with underground cabling left in situ and turbine bases covered with soil, resulting in no potential for cumulative effects with nearby developments.

# 7.13.29. **Assessment**

7.13.30. With regard to the development permitted under ABP. Ref. PL07.243094, to which the proposed development is seeking amendments, I note that the Planning Inspector assessed the impact of the project on archaeology and cultural heritage in detail. The area underwent extensive field surveys and re-examination of all map and aerial photographic sources. It was noted that early settlement activity is highly improbable due to the poor environment, and there are no protected structures or buildings of architectural merit on the site or in the visual envelope of the proposed development. The main potential impacts relate to existing and potential archaeological sites. The Inspector considered that subject to mitigation and on-site monitoring, the proposal would not significantly impact any Recorded Monuments,

including the possible Children's Burial Site. The visual impact on the Cairn was deemed insignificant, and while some field walls in the Cloghvalley settlement would be impacted, these works were not considered significant in the context of the area's archaeological heritage. Proposed mitigation measures, including excavation by qualified archaeologists, were deemed appropriate. Compliance with policies HL23 and HL25 of the Galway County Development Plan was also considered, with the Inspector concluding that the development would not destroy, alter, or cause inappropriate change to archaeological sites or their settings. The Inspector addressed the potential impacts on individual sites, including Knockranny Ring Cairn, the possible Children's burial ground, and the hut site, concluding that the proposal would not significantly alter their settings or character. The former settlements at Cloghvalley and Settlement 2 were also considered, with the Inspector noting that the impacts on these areas were not significant. Other features, such as hut circles, casual field walls, and possible pre-bog alignments, were also assessed, with no significant impacts identified. The Inspector concluded that the proposed development would not alter, damage, or destroy any registered archaeological features or features of interest and that any changes to the setting and character of the area were not inappropriate in the context of the archaeological features.

- 7.13.31. Under the current application, I note that the Department of Housing, Local Government and Heritage Development Applications Unit raised no objections to the proposed amendments and recommended conditions regarding the implementation of archaeological mitigation measures from the EIAR. They recommend that the Construction Environment Management Plan (CEMP) detail all archaeological and cultural heritage constraints, impacts, and mitigation strategies. In the event of a grant of permission, a comprehensive final archaeological report summarising all monitoring and investigative activities should be submitted to the Planning Authority and the Department upon completion of the work, with all associated costs borne by the developer.
- 7.13.32. Further to the above, I have examined, analysed, and evaluated Chapter 11 of the EIAR, all of the associated documentation, and submissions on file regarding archaeology and cultural heritage. It is my view that the proposed development has been thoroughly assessed in terms of its potential impacts on archaeological and cultural heritage assets. The EIAR presents a comprehensive desk-based review and

a field survey which identifies the key archaeological and cultural features within the study area, including a children's burial ground, a hut site, a cairn, and a cist.

- 7.13.33. I consider that the direct effects of the proposed development during the construction phase are primarily related to physical impacts on identified archaeological features. Specifically, the potential slight to moderate physical impact on the children's burial ground near Turbine 6 is a significant concern. However, it is my view that the proposed mitigation measures, such as archaeological supervision during groundworks, are appropriate and would effectively minimise these impacts. This supervision would involve a qualified archaeologist being present during all excavation activities to ensure any archaeological features or artifacts discovered are properly recorded and preserved. Moreover, the EIAR outlines that topsoil removal at Turbine 6 would be carried out under close archaeological supervision due to the possible presence of this children's burial ground. This approach is essential to protect any potential subsurface archaeology and to prevent inadvertent damage to the site. Additionally, the removal of stone field walls for access roads to Turbines 7 and 11 would also be conducted under archaeological supervision to safeguard any historical features that might be uncovered during construction. Other identified monuments, like the hut site and cairn, are located outside the planning boundary and would not be physically impacted.
- 7.13.34. Indirect effects during the operational phase would primarily be visual, as the presence of taller turbines could alter the landscape's appearance. The EIAR suggests that the increased turbine height may have a slight visual impact on Aughnanure Castle, a significant heritage site located c. 7km north of the proposed development. Despite the turbines being visible from the castle's higher levels, the intervening distance, coupled with the presence of mature trees surrounding the castle, would substantially mitigate this impact. Additionally, within the 5km study area, other monuments, such as ringforts, enclosures, and cairns, are noted. However, many of these sites exhibit low physical prominence, and their visual sensitivity is relatively limited. The existing vegetation and terrain would further obscure the turbines from many vantage points.
- 7.13.35. Given the considerations of distance, existing vegetation, varying terrain, and the limited visibility of many archaeological features, I consider that the visual impacts of the increased turbine height would not be significant. The indirect visual effects of

the proposed amendments to the permitted development on the archaeological and cultural heritage sites would be minimal and within acceptable limits, ensuring that the integrity and setting of these historical assets are preserved.

- 7.13.36. Regarding cumulative effects, I have taken into account the presence of other wind farms and various projects within a 10km radius. I concur with the EIAR's assessment that the proposed development, in conjunction with existing and planned projects, would not contribute to significant cumulative impacts on archaeological and cultural heritage assets. This conclusion is supported by the lack of substantial physical impacts and the limited visual intrusion from the proposed development.
- 7.13.37. I agree with the EIAR's assessment that the residual impacts, with the proposed mitigation measures in place, would not be significant. The mitigation measures, which include archaeological supervision during construction, careful excavation of stone field walls, and continuous monitoring, would ensure that any unforeseen archaeological discoveries are appropriately managed.
- 7.13.38. Taking into consideration the concerns raised in submissions, it is clear that the primary issues revolve around the adequacy of archaeological assessments and potential impacts on undiscovered sites. The EIAR has addressed these concerns by proposing the implementation of a robust methodology for site investigation and proposing detailed mitigation strategies. The Department of Housing, Local Government and Heritage Development Applications Unit also supports these mitigation measures and recommends additional conditions to further safeguard archaeological and cultural heritage.

# 7.13.39. **Conclusion**

7.13.40. I conclude that the proposed development, with the implementation of the identified mitigation measures, would not result in significant adverse effects on the archaeological and cultural heritage of the area. The likely significant effects are minimal, and the proposed measures are sufficient to protect and preserve the identified assets. Therefore, the proposed development would not have detrimental impacts on the archaeological and cultural heritage environment.

# 7.14. Noise and Vibration

# 7.14.1. Issues Raised

7.14.2. I note the third-party appeal submissions and observations received expressing concerns regarding noise and vibration. An appeal submission contends that the anticipated increase in noise levels from taller turbines poses significant health risks, including sleep disturbance and stress for nearby residents. It is argued that the developer's noise impact assessment is outdated, last conducted in 2013, and must be updated to reflect current conditions, including increased decibel levels and lowfrequency sound. Concerns are raised that baseline noise levels were artificially raised during the 2013 study period. The submission highlights previous compliance reports from nearby wind farms showing noise levels reaching 89% of the maximum threshold, with new taller turbines likely breaching permitted levels. Additionally, issues of noncompliance with noise monitoring requirements and planning conditions are noted. The cumulative noise impact from multiple wind farms in the area is also highlighted, emphasising the need for a thorough evaluation. The submissions collectively call for an updated, comprehensive noise assessment to ensure compliance with specified noise limits and address cumulative impacts, prioritising community health and adherence to noise standards.

# 7.14.3. Assessment Methodology

- 7.14.4. The EIAR details the methodology for assessing the noise and vibration impacts of the proposed wind farm development. The assessment sets out and adheres to relevant guidance documents for both the operational and construction phases. The EIAR describes the steps taken as follows: reviewing appropriate guidance to establish noise and vibration criteria, characterising the receiving environment through baseline noise surveys at various noise-sensitive locations (NSLs), and conducting predictive calculations to evaluate potential impacts during both construction and operational phases. It further specifies mitigation measures to reduce identified potential impacts and describes the significance of residual effects.
- 7.14.5. The EIAR notes that there is no specific Irish guidance for maximum permissible noise levels during construction, so it adopts the British Standard 5228-1:2009+A1:2014, categorising NSLs into Categories A, B, or C based on existing ambient noise levels.

The EIAR indicates that all properties near the rural site will be classified as Category A due to typical daytime ambient noise levels ranging from 40 to 50 dB LAeq,1hr. For construction traffic noise, the EIAR refers to the Design Manual for Roads and Bridges LA 111 (DMRB) to assess the magnitude of effects from changes in traffic noise levels, categorising the significance of effects as imperceptible, not significant, slight, moderate, or significant based on the increase in noise levels. The EIAR also addresses construction vibration impacts using guidance from BS 7385 and BS 5228. It posits that cosmetic damage to buildings is unlikely if transient vibration does not exceed specified peak particle velocity (PPV) thresholds, with lower limits set for continuous vibration and structures with pre-existing damage.

- 7.14.6. The EIAR details the methodology for assessing operational noise impacts from the proposed wind farm, referencing the "Wind Energy Development Guidelines" (WEDG) and the ETSU-R-97 publication. The EIAR notes the lack of specific advice on balancing power generation and noise impact but adopts a precautionary approach by incorporating relevant aspects from alternative guidance.
- 7.14.7. The EIAR details the WEDG, which describes noise-sensitive locations (NSLs) as including occupied residences and places where a quiet environment is highly desirable. It states that noise limits should reflect variations in turbine noise and background noise with wind speed. The EIAR indicates an absolute limit of 45 dB(A) or a maximum increase of 5 dB(A) above background noise for daytime, and a fixed limit of 43 dB(A) for night-time, referencing ETSU-R-97 for supplementing the WEDG where necessary. The EIAR outlines the application of these guidelines, noting that in quiet areas with background noise levels below 30 dB(A), the daytime noise should be limited to 35-40 dB(A) LA90,10min. It highlights the use of continuous baseline noise monitoring and regression analysis to derive background noise levels and establish appropriate noise criterion curves.
- 7.14.8. The EIAR references ISO 9613 for predicting noise emissions and compares predicted levels against noise criteria curves to ensure compliance. It notes the possibility of using low noise modes for turbines if noise reductions are necessary. Furthermore, the EIAR considers the WHO Environmental Noise Guidelines for the European Region but concludes that the conditional recommendation of 45 dB Lden should not currently be applied in Ireland due to uncertainties and potential poor characterisation of wind turbine noise using the Lden parameter. The EIAR acknowledges the ongoing

review and potential future changes in the Wind Energy Development Guidelines, committing to address any relevant updates during the application process through appropriate planning conditions or supplementary assessments.

- 7.14.9. The EIAR outlines the conditions for noise mitigation as stipulated in the permitted planning permission. Condition 8 mandates that noise mitigation measures be fully implemented. The condition requires that wind turbine noise, either individually or in combination with other wind developments, must not exceed 5 dB(A) above background noise levels or 43 dB(A) L90,10min, when measured at sensitive receptors. The developer is required to submit a noise compliance monitoring programme, including any necessary mitigation measures, prior to commencement. This programme must be agreed upon in writing with the planning authority, and results must be submitted within six months of commissioning.
- 7.14.10. Regarding infrasound and low-frequency noise, the EIAR cites various authoritative sources, indicating that modern turbines do not produce significant infrasound. The EPA notes that infrasound from contemporary wind turbines is negligible and below perception thresholds. Studies from the UK Health Protection Agency and the South Australian Environment Protection Authority support this, indicating that infrasound levels near wind farms are not different from other environmental sources. A German report corroborates these findings, showing infrasound levels from turbines are well below human perception thresholds even at close range.
- 7.14.11. For amplitude modulation (AM), the EIAR distinguishes between 'Normal' and 'Other' AM. 'Normal' AM, related to blade swish, is generally not significant at typical separation distances. 'Other' AM, caused by transient stall conditions, can result in periodic thumping but is considered rare and unlikely at operational wind farms. Research by Salford University and RenewableUK indicates that AM occurs infrequently and intermittently, making it difficult to predict at the planning stage. The Institute of Acoustics' document provides a method for measuring and rating AM, but it does not set specific limits. The EIAR suggests adopting best practices for long-term measurements and mitigation during the operational phase to manage AM if it occurs.
- 7.14.12. The EIAR details various aspects of noise and vibration methodology for the proposed wind farm development. It includes specific conditions from the planning

permission, methodologies for turbine noise calculations, and considerations for human health impacts and vibration. The EIAR states that long-term exposure to wind turbine noise does not result in negative health effects.

- 7.14.13. In terms of vibration, the EIAR cites a German study indicating that vibration levels from wind turbines are indistinguishable from background levels at distances over 300m. Given that the nearest NSLs are more than 500m away, vibration criteria are not specified for the operational phase.
- 7.14.14. For turbine noise calculations, the EIAR describes the use of DGMR iNoise Enterprise software, which follows ISO 9613 guidelines. The software considers various factors such as source magnitude, distance, obstacles, reflecting surfaces, ground hardness, atmospheric absorption, and meteorological effects. Two turbine models are assessed: Enercon E138 and Vestas V136, with detailed sound power level spectra provided for both. Table 12.4 of the EIAR includes data on the coordinates of the 11 proposed turbines and accounts for potential cumulative impacts from nearby operational and proposed wind farms. It applies a +2dB uncertainty to all turbine sound power levels and reduces LAeq levels by 2dB to derive LA90 levels, as recommended by best practice guidance from the Institute of Acoustics.
- 7.14.15. The EIAR concludes the methodology that the predicted cumulative noise levels will be compared against current planning conditions to identify any exceedances. Where necessary, it will propose appropriate mitigation measures to ensure compliance.
- 7.14.16. The EIAR describes the study area for environmental noise, referencing the IOA GPG, which mandates that the study area for background noise surveys and assessments should include areas where noise levels from the wind turbines may exceed 35 dB LA90 at up to 10 m/s wind speed. For the proposed development, the study area is defined by the 35 dB LA90 noise contour, potentially expanding due to cumulative impacts from other wind farms. Consequently, the assessment includes NSLs within the 25 dB contour, extending approximately 3.3 km from any proposed turbine, encompassing 270 NSLs as detailed in Appendix 12-4.

#### 7.14.17. Baseline Conditions

- 7.14.18. The EIAR states that an environmental noise survey was conducted by Malachy Walsh Partners to quantify the existing baseline noise environment at NSLs for the Permitted Development. The EIAR describes wind speeds being measured at 10m above ground level, adhering to the IOA GPG, which formalised best practices for measuring and analysing baseline noise levels for wind turbine assessments. The EIAR notes a correction of 3 m/s was applied to predicted noise levels in accordance with Section 4.5.4 of the IOA GPG, as detailed in Chapter 10 of the EIS for the Permitted Development.
- 7.14.19. The EIAR details the coordinates of the two noise monitoring locations, H002 and H157, and the respective measurement periods from 14 May 2013 to 23 May 2013. It indicates that a variety of wind speeds and weather conditions were encountered during the survey periods. For Location H002, the EIAR presents background noise levels for daytime and night-time periods in Figures 12.3 and 12.4, respectively. Similarly, for Location H157, the EIAR presents background noise levels for daytime periods in Figures 12.6.
- 7.14.20. The EIAR details that the noise condition for the permitted development is stated as "the greater of 43 dB LA90 or background + 5 dB." It concludes that compliance with this condition is demonstrated if predicted noise levels are 43 dB LA90 or less. The report states that the wind turbine noise criteria are constant at 43 dB LA90 across various wind speeds, thereby negating the effect of wind shear on the assessment.

### 7.14.21. Potential Effects

- 7.14.22. The EIAR states that if the proposed development does not proceed, the already permitted 11-turbine layout will proceed, missing the opportunity to increase energy output and contribute to renewable energy targets and greenhouse gas reduction.
- 7.14.23. The EIAR describes that during the construction phase, noise impacts for the Permitted Development were assessed, with proposed mitigation measures that remain applicable for the proposed development. It notes that construction activities would have negative, not-significant, and short-term effects. The EIAR details the grid connection route, involving underground cabling and extensions to the Ardderroo substation. The nearest noise-sensitive locations are 2.6 km away. Although exact

noise emission magnitudes are difficult to calculate, the EIAR uses BS 5228 guidelines to predict noise levels, indicating that construction noise would be short-term and lower at properties further from the works. The report presents noise levels for typical construction sources, showing compliance with best practice guidance, and concludes no significant noise impacts, hence no specific mitigation is required. Table 12.10 of the EIAR details that noise levels from grid connection construction activities, such as HGV movements and excavators, range from 19-36 dB LAeq,T at distances from 1000m to 2500m, staying within permissible limits.

- 7.14.24. The EIAR describes the omission of the on-site substation and connection to the Ardderroo substation, with no significant noise or vibration effects anticipated from the substation extension. Additional traffic noise, particularly during the concrete pouring phase, is assessed. The EIAR uses Chapter 5 data to update traffic flow assessments, presenting estimated changes in traffic noise levels. The change in noise levels due to the proposed development is deemed slight to moderate and short-term, similar to the permitted development, with no significant deviations. Table 12.11 of the EIAR indicates that changes in traffic noise levels due to the proposed development is development range from 0.4-4.4 dB LAeq, 12 hr, with effects on the N59 roads being imperceptible and on L-53453 being slight to moderate.
- 7.14.25. During the operations stage, the EIAR describes that the noise levels for the proposed development have been calculated for all noise-sensitive receivers within the study area, considering cumulative noise impacts from existing wind farms. It indicates that cumulative assessments were conducted for two turbine models, Enercon E138 and Vestas V136.
- 7.14.26. For the Enercon E138, the EIAR details that cumulative noise levels at 270 NSLs remain within the planning criterion of 43 dB LA90, with no excess noise predicted at any location. The potential effects are described as negative, moderate, and long-term. Table 12.12 of the EIAR details that the predicted cumulative noise levels for the Enercon E138 turbines at various distances from the nearest noise-sensitive locations range from 23.2 to 39.6 dB LA90, which are all within the planning criterion of 43 dB LA90, indicating no excess noise at any location.
- 7.14.27. Similarly, for the Vestas V136, the EIAR notes that predicted noise levels at all NSLs also stay within the 43 dB LA90 criterion, with no excess noise at any location.

The potential effects are characterised as negative, moderate, and long-term. Table 12.12 in the EIAR details that the predicted cumulative noise levels for the Vestas V136 turbines at various distances from the nearest noise-sensitive locations range from 22.1 to 39.3 dB LA90, all remaining within the planning criterion of 43 dB LA90, indicating no excess noise at any location.

- 7.14.28. The EIAR details that a comparison of predicted cumulative noise levels between the permitted development and the proposed development shows minimal differences. For the E138 turbines, the EIAR states that predicted noise level changes range from -0.6 to -0.1 dB, while for the V136 turbines, changes range from -0.0 to +0.2 dB. The EIAR states that these differences are imperceptible.
- 7.14.29. Table 12.14 shows that the predicted changes in noise levels for the E138 turbines range from -0.1 to +1.3 dB, while for the V136 turbines, the changes range from -0.3 to +0.1 dB. For example, at H001, the predicted noise level is 38.0 dB for E138, compared to 36.8 dB for the Permitted Development, a +1.2 dB change. At H157, the predicted noise level remains the same at 39.6 dB for E138, and slightly decreases by 0.3 dB for V136.

# 7.14.30. Mitigation Measures

- 7.14.31. For the Construction Phase, the EIAR states that mitigation measures from the previous EIS apply to the proposed development, adhering to British Standard BS 5228-1:2009+A1:2014 for noise and vibration control. The EIAR describes the following best practices:
  - Limiting noisy or vibratory activities to specific hours.
  - Establishing communication channels between contractors, the Local Authority, and residents.
  - Appointing a site representative for noise and vibration matters.
  - Monitoring noise and vibration levels during critical periods.
  - Maintaining even site access roads to reduce lorry-induced vibration.
  - Selecting low-noise/vibration equipment and positioning it away from sensitive areas.
  - Regular maintenance of equipment.
- 7.14.32. The EIAR details specific noise abatement measures, as follows:

- Preventing ongoing public nuisance from site noise.
- Minimising noise through proper equipment maintenance.
- Using effective exhaust silencers and attenuated compressors.
- Shutting down intermittent machinery when not in use.
- Surrounding noisy equipment operating outside regular hours with acoustic enclosures.
- Ensuring compliance with noise limits and restricting construction hours generally to 7:00-19:00 Monday to Saturday, with occasional exceptions.
- For rock breaking, the EIAR recommends using mufflers, sealing air leaks, dampening bits, and erecting acoustic screens.
- 7.14.33. During the operational phase, the EIAR indicates that no additional mitigation measures are needed as the predicted operational noise levels comply with best practice criteria. If alternative turbine technologies are used, a noise assessment will be conducted to ensure compliance, potentially implementing curtailment strategies. In case of low-frequency noise or amplitude modulation issues, detailed investigations following EPA and IOA guidelines will be undertaken.
- 7.14.34. Regarding monitoring, the EIAR recommends commissioning noise surveys to ensure compliance with noise conditions. If noise criteria are exceeded, corrective actions will be taken, such as curtailing turbine operations. Post-commissioning noise monitoring should follow IOA guidelines.
- 7.14.35. During the decommissioning phase, the EIAR posits that noise and vibration levels will be similar to those in the construction phase, with mitigation measures comparable to those outlined for construction. Expected noise levels will be below the 65 dB LAeq,T threshold, making the effects not significant. The same mitigation measures as for the construction phase will apply.

# 7.14.36. **Residual Effects**

7.14.37. The EIAR states that during the construction phase, noise emissions from site traffic and activities will affect nearby NSLs, but due to the distance from the main works and the short-term nature of construction, the impact will not be excessively intrusive. Implementing binding noise limits, operational hours, and control measures will minimise these effects, which are described as negative, not significant, and short-

term according to EPA criteria. For the operational phase, the EIAR indicates that predicted noise levels will adhere to best practice criteria, resulting in residual effects that are negative, moderate, and long-term.

### 7.14.38. Cumulative Effects

7.14.39. The EIAR indicates that during the construction phase, potential cumulative noise impacts from simultaneous construction of other developments are minimal due to the distances between the NSLs and the other wind farms, which are either partially constructed or operational, such as Ardderroo, Uggool, Cloosh, and Knockalough. Forestry operations concurrent with construction are also not expected to cause significant cumulative noise effects. During the operational phase, the noise assessment inherently considers cumulative wind turbine noise, meeting IOA GPG requirements. For other developments, such as the N59 Maigh Cullinn (Moycullen) Bypass Road Project and the Connemara Greenway, the EIAR states that due to the significant distances from NSLs, no significant cumulative noise effects are anticipated during either construction or operation. Additionally, no significant cumulative impacts are expected from local domestic or agricultural projects.

#### 7.14.40. Assessment

7.14.41. With regard to the development permitted under ABP. Ref. PL07.243094, to which the proposed development is seeking alterations, I note that the Planning Inspector assessed the impact of noise by reviewing the EIA, which stated that the assessment methodology used was adapted from the Good Practice Guide to the Application of ETSU-R-97. Noise monitoring was undertaken at two locations (N1 & N2), with a minimum distance of 1000m between turbines and dwellings incorporated into the design. The Inspector noted that the operational phase impacts, including predicted noise levels and cumulative impacts with other wind farms, adhered to the fixed limit of L90 43dB(A) as set out in the Wind Energy Guidelines (2006). Vibration was not anticipated to be a significant impact. Conditions were imposed to enforce noise mitigation measures. Condition No. 8 requires that wind turbine noise from the development, alone or in combination with other wind farms, shall not exceed the greater of 5 dB(A) above background noise levels or 43 dB(A) L90,10min at dwellings or sensitive receptors, and mandates a noise compliance monitoring programme to be

agreed with the planning authority. Condition No. 13 requires the submission and agreement of a Construction Management Plan detailing mitigation measures for noise and vibration and the monitoring of such levels to protect residential amenity.

- 7.14.42. The Wind Energy Development Guidelines (2006) outline specific requirements for assessing and mitigating noise impacts from wind turbines. The guidelines state that noise sources from turbines include aerodynamic noise from blades and mechanical noise from components like the generator and gearbox. Advances in turbine technology, such as variable speed operations and improved gearbox design, have reduced noise emissions. The guidelines recommend good acoustical design and careful siting to prevent significant increases in ambient noise levels at nearby sensitive locations, such as dwellings, health buildings, and places of worship. The guidelines detail that noise limits should apply only to external locations frequently used for relaxation or activities for which a quiet environment is highly desirable. A lower fixed limit of 45 dB(A)<sup>10</sup> or a maximum increase of 5 dB(A) above background noise at nearby noise-sensitive locations is recommended to provide protection to wind energy development neighbours. In very quiet areas, where background noise is below 30 dB(A), the guidelines recommend a daytime noise level of 35-40 dB(A) LA90, 10min. At night, a fixed limit of 43 dB(A) inside properties is set to prevent sleep disturbance. The guidelines state that noise is generally not considered a significant issue if turbines are more than 500 metres from noise-sensitive properties. Planning authorities may require evidence that proposed turbines utilise best engineering practices to minimise noise.
- 7.14.43. The Draft Revised Wind Energy Development Guidelines (2019) outline specific requirements for assessing and mitigating noise impacts from wind turbines. The guidelines recommend a relative noise limit of 5 dB(A) above existing background noise within the range of 35 to 43 dB(A), with a maximum limit of 43 dB(A) for both day and night, applied to outdoor locations at residential or noise-sensitive properties. The guidelines detail that penalties up to 11 dB(A) are imposed for special audible characteristics such as tonal noise and amplitude modulation. The guidelines emphasise the importance of good acoustical design and careful siting to prevent significant noise impacts at noise-sensitive locations, including dwellings, health buildings, and places of worship. The guidelines also address cumulative impacts, stating that noise levels from all existing and approved wind turbines must be

considered to ensure they do not exceed the relative or fixed noise limits. Additionally, planning applications must demonstrate compliance with these noise limits, including any potential special audible characteristics, through detailed noise assessments and post-completion monitoring.

- 7.14.44. Having reviewed the Environmental Impact Assessment Report, it is my view that the report adequately addresses noise and vibration impacts. The adoption of BS 5228-1:2009+A1:2014 for construction noise and the Wind Energy Development Guidelines (2006), along with ETSU-R-97 for operational noise, is appropriate. Proposed mitigation measures during construction, including restricting noisy activities to specific hours, establishing communication channels, and maintaining equipment, would reduce noise levels at nearby receptors. Specifically, the EIAR's commitment to limiting audible construction activities to daytime hours would mitigate potential sleep disturbance and stress for nearby residents.
- 7.14.45. The direct effects of the proposed project on noise during the operational phase have been evaluated using predictive calculations and continuous baseline noise monitoring. The EIAR demonstrates that predicted noise levels would adhere to the recommended limits of 45 dB(A) during the day and 43 dB(A) at night, ensuring no significant increase in ambient noise levels at nearby sensitive locations. Furthermore, the proposal maintains a minimum separation distance greater than 500 metres from the nearest noise-sensitive receptor, thereby complying with the Guidelines which stipulate this distance as a threshold where wind turbine noise is typically not considered a significant concern. As per Table 12.12 of the EIAR, the closest dwelling is H002, which is located at a distance of 1034 meters from the proposed turbines.
- 7.14.46. Indirect effects, particularly during the construction phase, include noise from construction activities and traffic. The adoption of British Standard BS 5228-1:2009+A1:2014 and the detailed mitigation measures, such as restricted hours of operation and the use of low-noise equipment, would effectively manage these impacts. I consider that these measures would mitigate construction noise to a level that is not significant and would be short-term in nature.
- 7.14.47. Cumulative impacts have been thoroughly assessed by considering the combined noise from the proposed development and existing or approved wind farms. The EIAR confirms that cumulative noise levels would not exceed the fixed limit of 43

dB(A) at sensitive receptors. The relative noise limit of 5 dB(A) above background noise, as imposed by Condition 8 of the permitted development, would ensure that the cumulative effect remains within acceptable bounds. Given the noise assessment methodology and the proposed implementation of continuous monitoring, I consider that cumulative noise impacts would not be significant.

7.14.48. Residual impacts would be minimal, with operational noise levels maintained within best practice criteria. Any potential issues, such as low-frequency noise or amplitude modulation, would be addressed through detailed investigation and mitigation strategies if they arise. The recommended noise monitoring programme would ensure ongoing compliance and prompt corrective action if necessary.

### 7.14.49. Conclusion

7.14.50. In conclusion, I find that the proposed amendments to the permitted wind farm development, with the implementation of the proposed mitigation measures and adherence to noise limits, would not result in significant adverse effects on the environment with respect to noise and vibration. The measures outlined in the EIAR align with the current and draft wind energy development guidelines, ensuring that the development would not adversely impact residential amenities and comply with environmental standards. The concerns raised in the submissions have been adequately addressed through the detailed noise assessment and proposed mitigation measures, which demonstrate the project would not have a significant negative impact on noise-sensitive locations.

# 7.15. Air Quality and Climate

# 7.15.1. Issues Raised

7.15.2. Third-party submissions and observations received expressed concerns regarding air quality and climate impacts. The submissions raise issues, including the potential for increased air pollution from construction activities and vehicle emissions. Concerns are highlighted about the adequacy of the EIAR's methodology, particularly the reliance on outdated baseline data and the need for more recent, comprehensive air quality assessments to reflect current conditions. There is also criticism regarding the

effectiveness of proposed mitigation measures, with demands for stricter controls and ongoing monitoring to ensure compliance with air quality standards.

# 7.15.3. Assessment Methodology

- 7.15.4. The EIAR details the methodology used for assessing the air quality and climate impacts of the proposed amendments to the permitted wind farm development. It states that air quality significance criteria are based on compliance with the Air Quality Standards Regulations 2022, which incorporate the European Commission Directive 2008/50/EC. The EIAR indicates that the primary pollutants of concern are NO2, PM<sub>10</sub>, and PM<sub>2.5</sub>, with specific limits set for each to protect human health and the environment. The EIAR describes the use of the Institute of Air Quality Management (IAQM) guidance for predicting dust impacts during the construction phase, categorising activities into demolition, earthworks, construction, and movement of vehicles, and assessing their magnitude and sensitivity to determine necessary mitigation measures. It also notes that construction phase traffic would not meet the criteria for a detailed air quality assessment as the increase in traffic would be below the threshold that would significantly impact air quality.
- 7.15.5. For the operational phase, the EIAR states that no significant air quality impacts are anticipated as there would be no change in operational traffic compared to the permitted development. The EIAR emphasises the use of renewable energy for electricity production, which would result in a net reduction of NO<sub>X</sub> emissions compared to fossil fuel-based power generation. The EIAR notes that the assessment methodology follows the TII Air Quality Assessment guidelines, determining the degree of impact based on both absolute and relative changes in pollutant concentrations, specifically PM<sub>2.5</sub>, PM<sub>10</sub>, and NO<sub>2</sub>. The EIAR details the significance criteria adopted from the TII guidelines, categorising impacts from neutral to substantial based on the percentage change relative to air quality standard values.
- 7.15.6. The EIAR details the methodology used for assessing the project's greenhouse gas emissions and its vulnerability to climate change. The EIAR states that the Greenhouse Gas Emissions Assessment (GHGA) quantifies emissions over the project's lifetime and compares them to relevant carbon budgets and policies to contextualise their magnitude. The Climate Change Risk Assessment (CCRA)

identifies the project's vulnerability to climate change and outlines adaptation measures to enhance resilience.

- 7.15.7. The EIAR indicates that construction activities may produce GHG emissions from vehicles, generators, and embodied energy in materials such as stone, concrete, and steel. It notes that while site traffic and plant are unlikely to significantly impact climate, the embodied energy from construction materials has been assessed. The EIAR references IEMA guidance, stating that a project's significance is based on its contribution to reducing GHG emissions relative to a trajectory towards net zero by 2050.
- 7.15.8. For the construction phase, the EIAR categorises emissions under land clearance, material transport, manufacture, construction works, and waste products. It references the use of the Scottish Carbon Calculator Tool to estimate carbon emissions and savings. The EIAR details that all peat and spoil material will remain within the site boundary, aligning with best practices to minimise carbon losses.
- 7.15.9. During the operational phase, the EIAR states there would be no significant GHG emissions, except minimal traffic emissions from maintenance activities. It highlights the CO2 savings from renewable energy production compared to non-renewable sources, using SEAI emission rates for calculations. The Climate Change Risk Assessment (CCRA), guided by EU and IEMA principles, assesses the project's exposure to climate hazards such as flooding, extreme heat, and wind. The EIAR describes a sensitivity and exposure analysis to determine the project's vulnerability, leading to the identification of necessary adaptation measures. The EIAR posits that the significance criteria for GHG impacts are based on the project's alignment with Ireland's net zero trajectory by 2050. It categorises impacts as significant adverse, not significant, or beneficial, depending on mitigation measures and policy compliance.

# 7.15.10. Baseline Conditions

7.15.11. The EIAR details the baseline air quality conditions, stating that the sensitivity of the area to dust soiling is low, as the nearest residential receptor is approx.1km from the site. The EIAR notes there are no designated ecological sites within 50m of the site, making significant ecological impacts unlikely. The EIAR indicates that meteorological data from Claremorris shows dust generation is reduced on the 211 "wet" days per year, which constitutes c. 57% of the time. Wind speed and direction

play a crucial role in dispersing air pollutants, and the EIAR describes how pollutant concentrations are generally inversely related to wind speed.

- 7.15.12. Reviewing EPA air monitoring data, the EIAR states that long-term NO2 concentrations at Zone D locations, including Castlebar, Emo, and Kilkitt, are significantly below the annual average limit of 40 μg/m3, with the maximum monitored annual mean concentration being 8 μg/m3. For PM10, the EIAR notes levels range from 8 12 μg/m3 over the five-year period, with compliance at all sites with the 24-hour limit value of 50 μg/m3. Based on this data, the EIAR estimates current background concentrations for NO2 at 8 μg/m3 and PM10 at 13 μg/m3 in the region of the proposed development.
- 7.15.13. The EIAR also details climate baseline data, noting Ireland's declared climate and biodiversity emergency. In 2021, total national GHG emissions were estimated to be 62.110 Mt CO2eq, with the highest emissions from agriculture (38%) and transport (17.7%). The EIAR emphasises that future climate impacts, such as increased temperatures and rainfall, must be considered in the development's detailed design to ensure resilience and compliance with the trajectory towards net zero by 2050. The EIAR summarises potential adverse impacts from climate change identified by the EPA, including more intense storms, increased flooding, and changes in plant and animal species distribution.

### 7.15.14. **Potential Effects**

- 7.15.15. The EIAR states that under the Do-Nothing Scenario, construction works would proceed as per the permitted development, with similar fugitive dust, particulate matter, and equipment emissions. The EIAR details that embodied CO2 emissions would slightly differ due to larger turbines, but this is offset by their greater power output, with the proposed development expected to generate 140 GWh per annum compared to 98 GWh from the Permitted Development. This shortfall in renewable energy generation is significant, long-term, and negative for climate targets.
- 7.15.16. The EIAR describes the construction phase's potential air quality impacts, focusing on PM<sub>10</sub> and PM<sub>2.5</sub> levels based on EPA data. It notes that construction traffic impacts are below TII scoping criteria and, therefore, considered temporary and imperceptible. Dust emissions, particularly from earthworks, are highlighted, but the EIAR indicates that there are no properties within 350m of the site's red line

boundaries and no sensitive ecological receptors within 50m, rendering the impact imperceptible and temporary. The EIAR posits that implementing a Dust Management Plan would minimise dust impacts.

- 7.15.17. Regarding climate effects during construction, the EIAR details GHG emissions from embodied carbon and construction activities. Using the Scottish Carbon Calculator, it estimates embodied emissions of 64,514 t CO<sub>2</sub>eq for the proposed development, an increase of 18,305 t CO<sub>2</sub>eq over the permitted development. The payback period for these emissions, considering renewable energy generation, is six months. The EIAR notes that annualised emissions are 0.056% of the 2030 electricity sector carbon budget and 0.0020% of Ireland's EU ESD Targets for 2030.
- 7.15.18. During operation, the EIAR describes that air quality impacts from increased road traffic would be imperceptible due to the low frequency of maintenance visits. The additional electricity generation from the proposed development is expected to result in significant NO<sub>X</sub> emission savings, decreasing annual NO<sub>X</sub> emission levels by 0.321% of 2020 power generation emissions, and saving over 430.6 tonnes of NO<sub>X</sub> over 25 years. This is considered a slight positive, long-term impact on air quality.
- 7.15.19. The EIAR details that the Scottish Carbon Calculator was used to assess the operational phase impacts, estimating that the proposed development would generate an additional 1,032,016 MWh over 25 years compared to the Permitted Development. The EIAR states that this results in an annual carbon emission saving of 14,357 tonnes CO2eq, totalling approximately 358,935 tonnes CO2eq over 25 years, equivalent to 11.9% of the 2030 carbon budget for the electricity sector or 1.09% annually. The EIAR posits that this project would significantly assist in meeting Ireland's GHG trajectory to net zero by 2050, thus representing a significant positive, long-term impact on climate.
- 7.15.20. The EIAR indicates that a Climate Change Risk Assessment (CCRA) was conducted to evaluate the operational phase's potential impacts, considering designed mitigation measures and exposure analysis. Potential impacts such as flood risk, increased temperatures, reduced temperatures, geotechnical impacts, and major storm damage were assessed. The EIAR describes that turbines, drainage, access tracks, buildings, and underground utilities were evaluated for sensitivity to climate hazards, revealing low to medium risks, with wind being the only medium risk due to design measures reducing sensitivity.

- 7.15.21. The EIAR notes that wind farms are vulnerable to extreme storms, with future climate change likely to increase such events. Design measures include foundations and turbines built to withstand severe wind loads as per IS-EN1991-1-4, reducing sensitivity and vulnerability. The EIAR describes that flood risk assessments showed no recorded flood events near the site, indicating no additional vulnerability due to the proposed development compared to the permitted development. The risk of wildfires is negligible, with design measures for temperature loads per IS-EN 1991-1-5 reducing vulnerability. The EIAR indicates that drought may impact soil stability but is considered low risk, with no additional vulnerability compared to the permitted development. Landslide susceptibility assessments concluded negligible impacts with proposed mitigation measures. The EIAR states that standard lightning protection would be incorporated, mitigating risks from lightning and hail. Fog is not considered a significant risk. The EIAR posits that there is no additional vulnerability to climate hazards for the Proposed Development compared to the Permitted Development, except for wind loading, which has been mitigated through design measures.
- 7.15.22. Regarding decommissioning, the EIAR indicates that the effects would align with those during the construction phase, with an outline decommissioning plan included in the CEMP in Appendix 2.1

### 7.15.23. Mitigation Measures

- 7.15.24. The EIAR details a range of mitigation measures for air quality during the construction phase, aiming to minimise dust and particulate matter emissions. These measures include:
  - Displaying contact details for air quality and dust issues at the site boundary.
  - Monitoring dust control methods and maintaining a complaint register for dust nuisance or air quality concerns.
  - Planning site layout to minimise dust impacts, erecting solid screens or barriers, and using wet methods for cleaning site infrastructure.
  - Ensuring all vehicles switch off engines when stationary, avoiding diesel or petrol generators, imposing a maximum speed limit of 20 kph.

- Using dust suppression techniques for cutting, grinding, or sawing equipment, ensuring an adequate water supply for dust suppression, and minimising drop heights from loading equipment.
- Avoiding bonfires and burning waste materials.
- Avoiding scabbling, storing materials in bunded areas, and delivering bulk materials in enclosed tankers.
- Implementing a speed restriction of 20 kph, conducting street and footpath cleaning, and ensuring vehicles are covered during transport.
- 7.15.25. The EIAR notes that these measures would be incorporated into the Construction Environmental Management Plan (CEMP) and monitored regularly to ensure effectiveness. Regarding climate during the construction phase, the EIAR describes measures to minimise impacts, such as ensuring machinery is properly maintained and switched off when not in use and considering the reuse and recycling of materials to reduce waste.
- 7.15.26. During the operational phase, the EIAR indicates that the activities would be limited to maintenance, with all machinery properly maintained and switched off when not in use to avoid unnecessary emissions. The EIAR posits that no additional mitigation measures are required during the operational phase concerning climate, as the development would have a significant positive, long-term impact on climate emissions.
- 7.15.27. Regarding residual effects, the EIAR details that with the implementation of dust mitigation measures, the residual effects of dust and particulate emissions would be imperceptible and short-term, posing no nuisance or health impacts. The EIAR posits that all residual climate impacts associated with the construction phase would be offset by the operational phase, resulting in a significant positive, long-term impact on climate, aligning with Ireland's GHG trajectory to net zero by 2050. The decommissioning impacts are considered unchanged from the permitted development.

# 7.15.28. Cumulative Effects

7.15.29. The EIAR states that there is potential for cumulative construction dust impacts if the proposed development coincides with other developments within 350m of the

site. However, it describes that no such developments are nearby and, with mitigation measures in place, no significant cumulative impact on air quality is likely during the construction phase. The EIAR details that the GHG impact of the project, presented in alignment with Ireland's net-zero trajectory and sectoral carbon budgets, inherently considers cumulative effects. The Scottish Carbon Calculator estimates cumulative GHG emissions from construction of the permitted and proposed development at 64,514 tonnes CO<sub>2</sub>eq, with a payback period of six months if compared to energy generation from coal. The EIAR posits that this aligns with Ireland's GHG reduction goals, indicating a significant positive, long-term impact on climate.

- 7.15.30. During the operational phase, the EIAR indicates that the cumulative impact of the proposed and permitted developments would save over 480.2 tonnes of NOX over 25 years. This represents 8% of NOX emissions from power generation in 2021. The EIAR notes that this cumulative reduction in NOX emissions aids in meeting national targets under the Gothenburg Protocol and other directives, resulting in a slight positive, long-term impact on air quality.
- 7.15.31. For climate during the operational phase, the EIAR reiterates that the GHG impact of the project, aligned with Ireland's net-zero trajectory, inherently considers cumulative effects. It posits that the project will assist in achieving CAP 2023 goals for renewable energy, contributing to a significant positive, long-term impact on climate. The EIAR concludes that the cumulative decommissioning impact of the proposed and permitted developments will remain unchanged from the permitted development alone.

#### 7.15.32. **Assessment**

7.15.33. I have examined, analysed, and evaluated Chapter 13 of the EIAR, all of the associated documentation, and the submissions on file in respect of Air Quality and Climate. It is my view that the proposed amendments to the permitted wind farm would not have significant adverse effects on air quality during both the construction and operational phases. The EIAR details robust mitigation measures for dust and particulate matter during construction, including site management practices, vehicle and machinery operation protocols, and the implementation of a Dust Management Plan. I consider that these measures accord with best practice guidelines and would effectively minimise any potential air quality impacts. Given the low sensitivity of the

area to dust soiling and the distance of sensitive receptors from the site, I consider it unlikely that significant dust-related impacts would occur.

- 7.15.34. For the operational phase, the EIAR indicates that the development would result in a net reduction of NOx emissions due to the generation of renewable energy. I consider this would have a slight positive, long-term impact on air quality, contributing to national targets for reducing air pollution from fossil fuel-based electricity generation. Maintenance activities associated with wind farms would have an imperceptible impact on air quality due to the minimal traffic involved.
- 7.15.35. Regarding climate impacts, I consider that the construction phase would generate GHG emissions primarily from embodied carbon in construction materials. However, the EIAR uses the Scottish Carbon Calculator to estimate that these emissions would be offset within six months of operation due to the renewable energy generated. This would be a significant positive outcome, aligning with Ireland's trajectory towards net zero by 2050. The cumulative GHG emissions from the proposed and permitted developments are presented within the context of national carbon budgets, demonstrating a substantial contribution to climate change mitigation.
- 7.15.36. I consider that the proposed development would have a significant positive, long-term impact on climate due to its contribution to renewable energy targets and the reduction of GHG emissions. The operational phase would further enhance this positive impact through continuous renewable energy generation, contributing to the Climate Action Plan 2024 goal of producing up to 80% renewables for the grid and 5 GW of onshore wind capacity.
- 7.15.37. The EIAR's assessment methodology is comprehensive, following TII and IEMA guidelines, and aligns with the Air Quality Standards Regulations 2022. The potential effects identified are likely to occur, but they are not significant in a negative context due to the effective mitigation measures proposed. Instead, the significant effects are positive, particularly in terms of climate benefits and air quality improvements through reduced NOx emissions.
- 7.15.38. In considering the cumulative effects, the EIAR does not include cumulative impacts on air quality and climate with other nearby permitted wind farms. However, I am satisfied that the positive effects of these permitted wind farms, including their

contribution to renewable energy generation and Ireland's Climate Action Plan goals, are addressed in their respective applications.

# 7.15.39. **Conclusion**

7.15.40. In light of the above, I conclude that the proposed amendments to the permitted wind farm development would not have significant adverse effects on air quality and would have a significant positive effect on climate. The project accords with relevant guidelines and would contribute positively to Ireland's environmental objectives.

# 7.16. Population and Human Health

# 7.16.1. Issues Raised

7.16.2. I note the third-party appeal submissions received expressing concerns regarding the impact of the proposed wind farm on population and human health. The primary concerns include the potential for increased air pollution from construction activities and vehicle emissions. Concerns were raised about the visual impact of the increased turbine height, which is believed to significantly alter the landscape and negatively affect the mental well-being of local residents, who value the visual amenity of their surroundings. There are also significant worries about shadow flicker from the taller turbines, which could pose health risks such as headaches and exacerbate conditions like epilepsy and autism, affecting six properties. Noise pollution from the larger turbines is another critical issue, with fears of increased noise levels causing sleep disturbance, stress, and other health problems. The submissions emphasise the need for effective and enforced mitigation strategies to address these health impacts comprehensively.

# 7.16.3. Assessment Methodology

7.16.4. The EIAR describes a desktop study conducted using published policy documents and data to appraise the location and potential impacts on population and human health receptors. The EIAR details the use of population data from the CSO Census 2011, 2016, and preliminary 2022 data, alongside the Galway County Development Plan 2022. For tourism-related considerations, the EIAR references Fáilte Ireland's guidelines and studies on visitor attitudes and wind farms' effects on tourism. In terms

of human health, the EIAR indicates the consultation of various health studies and position papers from reputable sources such as the HSE, IEMA, and Health Canada, among others. The EIAR notes that effects on receptors were assessed in terms of magnitude, quality, significance, and duration. A Shadow Flicker Analysis Report prepared by Malachy Walsh and Partners Engineering and Environmental Consultants is included in Appendix 14.1.

# 7.16.5. Baseline Conditions

- 7.16.6. The EIAR details the demographic trends based on Central Statistics Office (CSO) data, indicating that the subject site is rural with sparse population density, no dwellings within the study boundary, and no houses within 1 km of any of the proposed turbines. The nearest settlements include Roscahill village c. 3 km NE, Moycullen c. 4.5 km SE, Oughterard town c.9 km N, and Galway city c.15 km SE. The population growth in the study area from 2016 to 2022 was 9.9%, with Moycullen experiencing the highest growth at 14.2%, largely due to its proximity to Galway City.
- 7.16.7. The EIAR notes that the employment rate in the study area is higher than the county and national averages, with a labour force participation rate of 61.2% and an employment rate of 91%. The predominant occupations are in professional services, skilled trades, and technical occupations, reflecting the urban influence of Galway City. The EIAR indicates that land use in the area includes commercial forestry, rough grazing pasturelands, bog, heath, and small settlements, with the Connemara Bog Complex and Lough Corrib as significant natural features.
- 7.16.8. The EIAR describes several existing and permitted wind farms in the vicinity of the proposed development. These include:
  - Ardderroo Wind Farm: Owned by Ardderroo Windfarm Ltd, it comprises 25 turbines and is located 27m from the development lands. This wind farm is currently under construction.
  - Inverin: Owned by Fuinneamh Teoranta, it consists of 5 turbines and is situated 10.4km southwest of the development lands. This wind farm is existing.
  - Cloosh: Co-owned by Coillte Teoranta and SSE Renewables (Ireland) Ltd, it includes 22 turbines (20 operational) and is located 4.3km west of the development lands. This wind farm is existing.

- Uggool: Owned by SSE Renewables (Ireland) Ltd, it has 16 turbines and is located
  2.6km northwest of the development lands. This wind farm is existing.
- Seecon: Also co-owned by Coillte Teoranta and SSE Renewables (Ireland) Ltd, it comprises 23 turbines (16 operational) and is situated 5.2km southwest of the development lands. This wind farm is existing.
- Seecon & Cloosh: This permitted wind farm, co-owned by Coillte Teoranta and SSE Renewables (Ireland) Ltd, has 9 turbines with a change of specification and is located 4-5km west of the development lands.
- Lettercraffroe: Owned by SSE Renewables (Ireland) Ltd, it consists of 8 turbines and is situated 7.3km northwest of the development lands. This wind farm is existing.
- Knockalough Wind Farm: Owned by Knockalough Wind Farm Ltd, it has 12 turbines and is located 3km south of the development lands. This wind farm is existing.
- Leitir Gungaid (Lettergunnet): Owned by Coir na Gaoithe Teoranta, it comprises 10 turbines and is situated 6.9km south-southeast of the development lands. This wind farm is existing.
- Letterpeck (Shannagurran & Truskaunngappul): Owned by Enerco Energy Ltd, it includes 7 turbines and is located 5.3km south of the development lands. This wind farm is existing.
- 7.16.9. The EIAR indicates that Galway City and County are significant tourist destinations, with 1.6 million international visitors and 1.1 million domestic visitors in 2019, generating €743 million in tourism revenue. This highlights the economic importance of tourism, accounting for 12-14% of businesses and 21,000 jobs in the county.
- 7.16.10. The EIAR describes the study area, emphasising the N59, a popular tourist route and part of the Galway Clifden Scenic Route. Oughterard, located on the Owenriff River at the shore of Lough Corrib, is a key angling and fishing centre, hosting annual competitions and serving as the Gateway to Connemara. The Connemara National Park, covering 2,957 hectares, includes mountains, bogs, heaths, grasslands, and woodlands. The EIAR also references several Coillte amenity areas and walking trails within the study area, such as Newvillage Forest Recreation Area, Derroura Mountain Bike Trail, and Lackavrea. Additionally, it mentions the proposed extension of the Connemara Greenway from Oughterard to Galway City and the on-

site recreation and amenity area at the adjacent Ardderroo Wind Farm, which includes looped trails and visitor facilities.

# 7.16.11. **Potential Effects**

- 7.16.12. The EIAR describes that if the proposed development does not proceed, the already permitted development would continue as planned, missing the opportunity to enhance renewable energy output and meet governmental and EU targets for reducing greenhouse gas emissions. The EIAR details that the impacts during the operational stage of the permitted development are primarily neutral or minor, with significant impacts only anticipated in landscape and visual assessments.
- 7.16.13. The EIAR states that during construction, no significant effects on the demographic or growth patterns are expected, given the sparse population density near the site and the clustering of recent population growth around settlements and along the N59. The effects on employment and economic activity are considered neutral, imperceptible, and short-term, with positive impacts on local employment and economic activity through the use of local contractors and suppliers. Regarding land use, the EIAR notes that the site is currently used for commercial forestry, small-scale agriculture, and wind energy. The changes from the proposed development, such as cabling and road upgrades, are temporary and would not result in significant land use impact. The omission of the on-site substation would result in a slight reduction in landuse change. The EIAR indicates that the construction phase would not have a significant impact on local services and community resources. The use of local services by construction personnel would support the local economy, with no further significant effects anticipated. In terms of tourism and recreational amenity, the EIAR notes that the area is not a direct tourist attraction, and the construction phase would not significantly impact tourism. Visibility of construction from recreational routes and the N59 is deemed negligible, with the quality of effect considered neutral.
- 7.16.14. The EIAR posits that potential effects on human health and residential amenity during construction, including nuisance from air quality, noise, vibration, and traffic, are not significant. Noise impacts are considered slight to moderate in specific areas but generally not significant. Dust emissions are scoped out, with mitigation measures ensuring imperceptible and temporary effects. The payback period for climate impact is six months when compared to coal-powered energy generation.

- 7.16.15. In terms of effects during operation, the EIAR indicates that one permanent local job for operator and maintenance tasks would be created, with no significant effect on the population envisaged. The operational effect would be long-term, neutral, and imperceptible. The EIAR details that the operational phase would have a slight positive impact on local employment and economic activity, but overall, the effect is considered long-term, neutral, and imperceptible. In terms of land use, the EIAR describes that the proposed development would not significantly alter land use compared to the permitted development, maintaining livestock grazing and forestry activities, with effects considered neutral, imperceptible, and long-term.
- 7.16.16. Regarding services and community resources, the EIAR notes that the proposed development would increase the estimated installed capacity to between 46.9MW and 49.5MW per hour, resulting in a significant increase in community benefit funding. This funding would bring significant positive changes to the local area, making the effects positive, significant, and long-term. The EIAR posits that tourism and recreational amenities would not be significantly impacted, noting positive perceptions of wind farms in existing studies. While the visibility of turbines would slightly increase, this is considered to be within an already modified landscape, resulting in negative, slight-imperceptible, and long-term visual impacts.
- 7.16.17. In relation to human health and residential amenity, the EIAR references several studies indicating that modern wind turbines pose negligible health risks. Noise and shadow flicker are addressed, with the EIAR concluding that the operational phase noise levels for the candidate turbines will be imperceptible, resulting in neutral, long-term, and imperceptible effects. The EIAR emphasises the slight positive long-term effect on air quality due to reduced carbon emissions from fossil fuels.
- 7.16.18. The EIAR describes several existing wind farms in the vicinity, including the 174MW Galway Wind Park and the 25-turbine Ardderroo Wind Farm, among others. The other existing and permitted wind farms listed in Table 14.8 include Inverin, Cloosh, Uggool, Seecon, Lettercraffroe, Knockalough, Leitir Gungaid, and Letterpeck. These farms vary in size and proximity to the development lands, with the closest being Ardderroo at 27 meters and the furthest, Inverin, at 10.4 km southwest. Most of these wind farms are already existing, with some like Seecon & Cloosh permitted and under construction.

- 7.16.19. Regarding Shadow Flicker, the EIAR includes a Shadow Flicker Analysis Report that follows the 2006 Wind Energy Development Guidelines, which recommend that shadow flicker should not exceed 30 hours per year or 30 minutes per day at offices and dwellings within 500m of a turbine. The EIAR states that there are no dwellings within 500m of a proposed turbine, thus complying with these guidelines. The analysis determines that shadow flicker could theoretically affect up to six properties within the 10-rotor diameter study area under conservative conditions. The report notes that, accounting for average annual sunshine data, the potential shadow flicker at all dwellings falls well below the best practice threshold of 30 hours per year.
- 7.16.20. The EIAR details a mitigation strategy for shadow flicker, ensuring that in the event of exceedances, measures such as screening or turbine control would be implemented. The shadow flicker model provides detailed data to program control modules on turbines, pausing operation to prevent exceeding the 30-minute daily limit. Table 14.10 in the EIAR details the shadow flicker mitigation strategy, indicating that for both 136m and 138m rotor diameter turbines, the predicted pre-mitigation shadow flicker scenario ranges from 0.46 to 0.56 hours per day across six houses. Postmitigation measures ensure that shadow flicker at all affected properties is reduced to ≤ 0.50 hours per day. The EIAR concludes that, with mitigation measures in place, the effect of shadow flicker will be negative, long-term, and imperceptible.
- 7.16.21. The EIAR references a study from Scotland in 2016, which found no consistent negative effect of proximity to wind turbines on property values. During the decommissioning phase, the EIAR posits that the effects on population and human health will be similar in nature and scale to those during the construction phase. These effects are anticipated to be negative, slight, and temporary.

# 7.16.22. Mitigation Measures

- 7.16.23. The EIAR states that no significant mitigation is required for population and human health during the construction phase. The EIAR details several mitigation measures, including:
  - The design and construction phases would comply with the Safety, Health and Welfare at Work (Construction) Regulations 2006, involving a Safety and Health Plan and restricted site access.

- Good management practices would be applied to control dust, maintain stockpiled materials and roads, and ensure vehicle emissions are minimised by maintaining quality and prohibiting idling.
- Traffic impacts would be mitigated by informing local residents of large HGV traffic and agreeing on traffic signage and turbine delivery routes with Galway County Council and the Gardaí.
- 7.16.24. The EIAR posits that these measures, along with specific mitigation from the Noise, Air Quality, and Climate Chapters incorporated into the CEMP, would minimise potential impacts.
- 7.16.25. During the operation phase, the EIAR details that regular maintenance and inspection procedures would ensure negligible risks to human health. Mitigation measures from the Noise, Shadow Flicker, and Land and Soil sections, incorporated into the CEMP, would be implemented to reduce potential adverse impacts on residential amenity.
- 7.16.26. The EIAR indicates that for shadow flicker, screening measures would be discussed with affected landowners, and if ineffective, wind turbine control measures would be implemented to safeguard all dwellings from shadow flicker effects.

# 7.16.27. Residual Effects

7.16.28. The EIAR indicates that with the implementation of specific mitigation measures during the construction and decommissioning phases, including those outlined in the Traffic and Transport, Noise, Air Quality, and Climate Chapters, no significant residual impacts on population or human health are anticipated. The residual effects are expected to be neutral to negative, of imperceptible to slight magnitude, and temporary to short-term in duration. During the operational phase, the EIAR posits that with mitigation in place, the residual effects would range from significant positive long-term effects regarding services and community resources to imperceptible to slight negative long-term visual impacts, overall resulting in a neutral and imperceptible long-term effect on population and human health.

# 7.16.29. Cumulative Effects

7.16.30. The EIAR notes that during the construction phase, the cumulative effects on population and human health are expected to be minimal due to the completion of other nearby projects, such as the Ardderroo Wind Farm and the Moycullen By-pass Road Project, before the commencement of the Proposed Development. Any coinciding construction activities, such as the nine permitted turbines in Galway Wind Park or local forestry felling, would be managed via the CEMP to minimise impacts. During the operational phase, the EIAR describes that there are no anticipated significant negative cumulative effects on population, employment, land use, tourism, or recreational amenity. The cumulative human health consideration regarding shadow flicker, assessed in combination with nearby wind farms, indicates no significant impacts on residential receptors. The noise assessment confirms that cumulative wind turbine noise effects would remain consistent with those of the permitted development. Thus, the EIAR concludes no significant cumulative operational effects on population and human health from other projects in the vicinity.

### 7.16.31. **Assessment**

- 7.16.32. I have examined Chapter 14 of the EIAR, all of the associated documentation, and submissions on file in respect of Population and Human Health. With regard to the issue of air pollution from construction activities, it is my view that the mitigation measures proposed, including good construction management practices and the maintenance of vehicles and plant, would ensure that emissions are kept within acceptable limits. The EIAR describes measures to control dust and prohibit vehicle idling, which I consider sufficient to address the concerns raised.
- 7.16.33. Regarding the visual impact of the increased turbine height, I consider that the slight-imperceptible and long-term visual impact, as described in the EIAR, is acceptable given the rural nature of the site and the presence of existing wind farms. This issue is addressed in greater detail in Section 7.6 of this report. I consider the mental well-being of local residents, who value the visual amenity of their surroundings, unlikely to be significantly affected by the proposed development.
- 7.16.34. Regarding the issue of shadow flicker, the EIAR notes that there are no dwellings within 500m of a proposed turbine and is thereby inherently compliant with the Wind Energy Guidelines (2006), which recommend that shadow flicker at
neighbouring dwellings within 500m should not exceed 30 hours per year or 30 minutes per day.

- 7.16.35. The Guidelines recommend that "at distances greater than 10 rotor diameters" from a turbine, the potential for shadow flicker is very low. Where shadow flicker could be a problem, developers should provide calculations to quantify the effect and where appropriate take measures to prevent or ameliorate the potential effect, such as by turning off a particular turbine at certain times". The Shadow Flicker Analysis Report in Appendix 14.1 models the potential shadow flicker at six properties within 10 rotor diameters of the turbines, demonstrating that, even under theoretical conservative conditions, the shadow flicker impact would be minimal. Specifically, the assessment considers the worst-case scenario, assuming continuous sunny days with no interruptions and the turbine blades continuously rotating. Despite these conservative assumptions, the results indicate that shadow flicker would still remain well below the threshold of 30 hours per year or 30 minutes per day, as recommended by the Wind Energy Guidelines 2006. For instance, for the properties identified within the 10 rotor diameter zone, the model predicted shadow flicker occurrences ranging from 0.46 to 0.56 hours per day in the pre-mitigation scenario. Post-mitigation, these values are reduced to less than 0.50 hours per day, ensuring compliance with the guidelines. The mitigation strategy, including turbine control measures, would ensure that any exceedances are effectively managed. I consider that with these measures, the impact of shadow flicker would be negative, long-term, and imperceptible.
- 7.16.36. Regarding noise pollution, the EIAR details that the predicted noise levels from the proposed turbines would remain within acceptable limits. The noise impacts are assessed as neutral, long-term, and imperceptible. This conclusion is supported by international health studies referenced in the EIAR, which indicate that modern wind turbines pose negligible health risks. This issue is addressed in greater detail in Section 7.14. I consider that the noise mitigation measures proposed are adequate to address the concerns of increased noise levels causing sleep disturbance, stress, and other health problems.
- 7.16.37. With respect to employment and economic activity, I consider that the proposed development would have a slight positive impact on local employment and economic stability. The use of local contractors and suppliers during the construction phase

would support the local economy. The operational phase would create one permanent local job, with no significant demographic changes expected.

- 7.16.38. Regarding land use, the site would continue to support livestock grazing and forestry activities. The impact on land use would be neutral, imperceptible, and long-term. In terms of services and community resources, the proposed increase in installed capacity would result in a significant positive impact on community resources through increased community benefit funding. This funding would support local projects and initiatives, bringing significant positive changes to the local area.
- 7.16.39. The cumulative effects of the proposed development, in conjunction with other existing and planned projects in the area, have been assessed. The EIAR concludes that there are no significant cumulative impacts on population and human health. I am satisfied that the combined noise and shadow flicker effects from nearby wind farms are within permissible limits, ensuring no significant additional impact on local residents.

#### 7.16.40. **Conclusion**

7.16.41. In conclusion, I consider that the direct, indirect, cumulative, and residual impacts of the proposed amendments to the permitted wind farm on population and human health would not be significant. The proposed mitigation measures would ensure that any potential negative effects are minimised. Therefore, the project would not significantly affect the environment in terms of population and human health.

# 7.17. Interaction of Impacts

- 7.17.1. Article 3(1) of the EIA Directive, as updated by Directive 2014/52/EU, requires the identification, description, and assessment of the direct and indirect significant effects of a project on various environmental factors, including the interaction between these factors. Annex IV of the amended Directive further specifies the need to describe direct, indirect, secondary, cumulative, short, medium and long-term, permanent, and temporary, positive and negative effects of the project.
- 7.17.2. The EIAR details that Chapters 4 to 14 have identified potential significant environmental effects related to Landscape and Visual Impact, Material Assets, Land and Soils, Water, Biodiversity, Ornithology, Archaeology and Cultural Heritage, Noise

and Vibration, Air Quality and Climate, and Population and Human Health. It is noted that environmental factors are intrinsically linked, with the potential for positive or negative interactions that could influence the magnitude of the effects.

- 7.17.3. The permitted development EIS identified dynamic interactions, notably between ecology, soils, and hydrology, highlighting the removal of soil cover impacting runoff and subsequent changes in hydrology affecting ecology. The EIAR revisits these interactions for the proposed development, focusing on specific interactions during construction, operation, and decommissioning phases.
- 7.17.4. The EIAR describes significant interactions during the construction phase, stating that landscape and visual impacts on the population would be neutral, temporary, and negligible. Traffic and transport impacts on the road network affecting the local population and economy are assessed to be temporary and not significant. The interaction of services, infrastructure, and utilities with the population and economy is considered to result in a temporary neutral, imperceptible effect.
- 7.17.5. The EIAR indicates that land and soil interactions could potentially impact the population and economy through increased road traffic and air quality and climate through dust and emissions, but these effects are deemed neutral, imperceptible, and short-term. Potential negative interactions with air quality, biodiversity, and hydrology could occur from tree-felling and peat erosion if not properly mitigated.
- 7.17.6. The EIAR details interactions involving water, identifying potential impacts from surface water and groundwater contamination affecting biodiversity, land and soils, and human health. It concludes that potential impacts would be slight to moderate and temporary if unmitigated. Biodiversity interactions with noise, land and soils, and water are noted, with potential slight permanent impacts on certain mammals and short-term moderate effects on bats.
- 7.17.7. The EIAR posits that operational phase interactions would be minor due to the existing presence of wind turbines in the area, with landscape and visual impacts assessed as low-negligible and neutral-negative. Traffic and transport impacts on the road network are considered imperceptible. The development's contribution to the electricity supply network is deemed a positive, moderate long-term impact, with indirect positive impacts on air quality and climate.

- 7.17.8. The EIAR asserts that no new operational phase impacts arise from the proposed development on land and soils. Water interactions with biodiversity, land and soils, and human health are considered slight, negative, and temporary to long-term. Biodiversity interactions, with proper mitigation, are not expected to have significant effects. Ornithological interactions are deemed to have no adverse effects on key receptors. The EIAR states that archaeological and cultural heritage impacts would be slight to moderate, with no significant effects anticipated. Noise and vibration interactions are assessed as imperceptible, with the operational phase impact.
- 7.17.9. The EIAR posits that residual effects on population and human health, with recommended mitigation, would range from significant, positive, long-term impacts on services and community resources to slight-negative, long-term visual impacts. The overall residual effect is envisaged to be neutral, imperceptible, and long-term.
- 7.17.10. I am satisfied that the EIAR adequately identifies and describes the interactions and potential impacts of the wind farm project on the environment. It provides a robust framework of mitigation measures to manage these impacts effectively during the construction, operational, and decommissioning phases.

#### 7.18. Reasoned Conclusion

- 7.18.1. Having regard to the examination of environmental information detailed above, the EIAR and supplementary information provided by the applicant, the issues raised in the appeal submissions, the Planning Authority report, Prescribed Bodies reports, and observer submissions in the course of the application, I consider that the main significant direct and indirect effects of the proposed development on the environment are as follows;
  - Landscape and Visual Impact: The proposed amendments to the permitted Knockranny Wind Farm include increasing turbine height from 130.5m and 140.5m to 150m, potentially altering the existing landscape character and affecting the visual experience from various sensitive receptors, including local settlements and scenic routes. The greatest landscape impact would arise from introducing tall structures with moving components, though the increase in turbine height is considered relatively minor and would maintain visual coherence with adjacent developments like Ardderroo

Wind Farm. The visual impact assessments indicate that effects range from slight to imperceptible, with the highest significance at Ross Demesne (VP7). Mitigation measures include strategic turbine placement and integration of the development with existing wind farm infrastructure, such as using the existing Ardderroo substation to reduce visual clutter. The cumulative visual impacts would be negligible, and the overall visual coherence of the landscape would be maintained. These measures would ensure the proposed development aligns with the mostly designated Strategic Area for Wind Development, adhering to relevant national, regional, and Development Plan policies.

- Traffic and Transportation: The proposed development, which would follow an approved haulage route using the N59 and L-53453, is projected to have manageable direct and indirect traffic effects during its 16-18 month construction phase. The peak construction period would see an additional 44 HGV movements per day over 11 days for concreting turbine foundations, resulting in a combined maximum of 240 daily movements. These impacts, while substantial, are considered temporary and not significant. The EIAR details comprehensive mitigation measures, including strict HGV protocols, designated haulage routes, advance warnings to residents, speed limits, and regular road condition monitoring. The cumulative effects of concurrent construction activities with nearby projects like the Ardderroo Wind Farm and Galway Wind Park have been assessed, concluding temporary and slight impacts, effectively mitigated by coordinated construction activities and a Traffic Management Plan. The proposed development would not significantly impact traffic and transportation, provided the mitigation measures are rigorously enforced, aligning with the requirements for managing traffic impacts effectively.
- Material Assets: The direct effects on material assets such as electricity supply, aviation, telecommunications, water supply, and wastewater infrastructure would be minimal. During the construction phase, the use of onsite generators would prevent additional power demands on the existing network, resulting in a neutral, imperceptible, short-term effect. Operationally, the development would positively impact electricity supply by increasing renewable energy efficiency and contributing to national emission reduction targets, while adhering to ESB clearance requirements and consultation with the IAA will mitigate potential aviation impacts. The developer's commitment to resolving any interference with telecommunications through a signed

protocol with 2rn would ensure a neutral, imperceptible long-term effect on these services. Water supply and wastewater infrastructure would experience negligible impacts due to the use of sealed tanks and authorised contractors. Waste management practices during construction and operation are adequate, resulting in minimal waste generation and a negative, slight, occasional impact. Cumulative effects would not be significant, as each project mitigates its impacts independently, particularly in terms of aviation and telecommunications. Thus, the proposed development would not significantly adversely affect material assets, and the proposed mitigation measures would address potential impacts, with residual and cumulative effects being minimal.

- Land and Soils: The Geotechnical and Peat Stability Assessment confirms that the site has a low risk of peat failure, supported by detailed site reconnaissance, peat depth probing, and stability analyses. Specific mitigation measures, such as the use of spread foundations, construction buffer zones, and proper drainage systems, have been proposed to address potential risks, particularly at high-risk locations like Turbine T8. The EIAR also addresses potential soil pollution from accidental spillages and erosion, proposing measures such as minimal on-site refuelling, bunding of storage areas, use of spill kits, and temporary drainage systems. Cumulative impacts from other developments would not be significant due to effective soil disturbance management and robust mitigation measures. The Construction Environmental Management Plan outlines specific spoil management, dust control, and emergency response plans to mitigate potential impacts. The proposed development would not have significant adverse effects on land and soil, provided the mitigation measures are effectively implemented.
- Water (Hydrology & Hydrogeology): Potential adverse effects include runoff and erosion from site surfaces during construction, which could lead to sedimentation in local watercourses and contamination from potential fuel and chemical spills. Concerns are also raised about peat slippage and the potential cumulative impacts from neighbouring wind farms. To mitigate these impacts, the EIAR proposes a range of measures. The Construction Environmental Management Plan (CEMP) includes strict sediment and erosion controls, such as silt fences and temporary attenuation ponds, to manage surface water runoff. Pollution control measures for concrete pouring and fuel storage would be implemented, alongside continuous water quality

monitoring overseen by an Environmental Clerk of Works (ECoW). Additionally, construction compounds and storage areas would be located away from watercourses, and surplus material would be promptly removed. During the operational phase, impacts would be limited to minor increases in surface runoff, with wastewater managed by an existing holding tank. The EIAR also addresses potential cumulative impacts by ensuring that mitigation measures are in place to minimise the combined effects of multiple projects. Overall, the mitigation measures outlined in the CEMP, adherence to best practice guidelines, and continuous monitoring would effectively manage and minimise the hydrological and hydrogeological impacts throughout the project's lifecycle.

- Biodiversity: Potential adverse effects include significant risks to local wildlife and biodiversity, particularly avian and bat populations, local flora and fauna, sensitive ecological areas, and habitat disruption and fragmentation. To mitigate these impacts, the EIAR proposes several measures. These include maintaining a 50m buffer zone around turbines, directing construction lighting away from woodland and linear habitats, and implementing a Bat Monitoring Plan in line with Nature Scot guidelines. Sediment control measures, such as silt fencing and settlement systems, and specific forestry buffers would prevent sediment runoff into watercourses and protect aquatic habitats. Pre-construction surveys for amphibians and mammals, and translocation of any found individuals, would safeguard these species during the construction phase. The implementation of a Construction Environmental Management Plan (CEMP) would ensure best practices are followed, including limiting the open trench length and timely backfilling to mitigate disturbances to local fauna and flora. The proposed mitigation measures aim to ensure there are no significant adverse effects on designated sites, such as the Connemara Bog Complex SAC and Ross Lake and Woods SAC, or key species like bats, otters, and amphibians. Consequently, the proposed development, subject on the strict adherence to the specified mitigation measures, would not result in significant adverse effects on biodiversity.
- Ornithology: Potential adverse effects of the proposed wind farm on ornithology include habitat loss, disturbance during construction, and collision risks during operation, particularly affecting species like Golden Plover, Hen Harrier, and Kestrel. The EIAR proposes appropriate mitigation measures such as habitat restoration, nonbreeding season construction, a Red Grouse Management Plan, sensitive area

demarcation, and turbine design adjustments to reduce collision risk. Extensive field surveys and ongoing bird monitoring programs support the conclusion that potential impacts would be minimal and manageable. The strategic layout of turbines mitigates cumulative adverse effects, ensuring that the development would not have significant negative impacts on ornithology.

- Archaeology and Cultural Heritage: The proposed development would have minimal direct construction impacts on known archaeological features, as comprehensive assessments have identified key sites such as a children's burial ground, a hut site, a cairn, and a cist. These features would be protected through archaeological supervision during construction activities. Indirect visual effects on cultural heritage sites are expected to be limited due to the distance, existing vegetation, and topography. To mitigate potential adverse effects, the EIAR outlines detailed strategies, including archaeological monitoring during groundworks, careful excavation of stone field walls, and continuous supervision by qualified archaeologists. These measures would protect and preserve the archaeological and cultural heritage of the area throughout the development's lifecycle.
- Noise and Vibration: The proposed development would have minimal significant impacts on noise and vibration, both during construction and operation. The EIAR outlines that construction noise would adhere to British Standard BS 5228-1:2009+A1:2014 guidelines, with mitigation measures such as limiting noisy activities to specific hours, using low-noise equipment, and monitoring noise levels to minimise disruption to nearby residents. During operation, noise predictions indicate compliance with the Wind Energy Development Guidelines (2006) and ETSU-R-97, maintaining noise levels below 45 dB(A) during the day and 43 dB(A) at night, with a minimum 500m separation from noise-sensitive receptors. The EIAR also addresses cumulative impacts, confirming that combined noise levels from the proposed and existing wind farms would not exceed the specified limits. Mitigation measures include continuous monitoring and potential curtailment of turbine operations if necessary, ensuring that any residual impacts are slight and manageable. Thus, with the proposed mitigation strategies, the development would comply with noise standards and not significantly affect residential amenities.
- Air Quality and Climate: The proposed wind farm development would have minimal significant impacts on air quality during construction and operation. The EIAR details

robust mitigation measures, such as dust management practices and vehicle operation protocols, to minimise dust and particulate matter emissions during construction. Given the distance of sensitive receptors from the site and the low sensitivity of the area, significant dust-related impacts are unlikely. During the operational phase, the development would result in a net reduction of NOx emissions, contributing positively to national targets for reducing air pollution from fossil fuelbased electricity generation. This would have a slight positive, long-term impact on air quality. The construction phase would generate GHG emissions primarily from the embodied carbon in materials, but these emissions would be offset within six months due to the renewable energy generated, aligning with Ireland's net zero trajectory by 2050. The project would have a significant positive, long-term impact on climate due to its contribution to renewable energy targets and the reduction of GHG emissions. The cumulative climate benefits during operation are substantial, further enhancing the positive impact on climate through continuous renewable energy generation. The assessment methodology follows TII and IEMA guidelines, ensuring that the potential effects are managed effectively with significant positive outcomes for air quality and climate.

**Population and Human Health**: The proposed development would have minimal significant impacts on population and human health. During construction, good management practices, vehicle maintenance, and dust control measures would ensure emissions and air pollution remain within acceptable limits, resulting in temporary and slight negative impacts. Visual impacts from increased turbine height are considered slight-imperceptible and long-term, unlikely to significantly affect local residents' mental well-being. Shadow flicker is addressed through a mitigation strategy, ensuring compliance with guidelines and resulting in long-term imperceptible impacts. Noise levels from the turbines would remain within acceptable limits, with modern studies indicating negligible health risks. The development would have a slight positive impact on local employment and economic activity by using local contractors and suppliers during construction and creating one permanent job during operation. Land use would remain largely unchanged, supporting livestock grazing and forestry with long-term neutral and imperceptible impacts. The increase in installed capacity would lead to significant positive impacts on community resources through increased community benefit funding. Cumulative effects from other nearby projects are

assessed to be within permissible limits, ensuring no significant additional impact on local residents. Therefore, the proposed development, with effective mitigation measures, would not significantly affect population and human health.

7.18.2. The EIAR has considered that the main significant direct and indirect effects of the proposed development on the environment would be primarily mitigated by environmental management measures, as appropriate. 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.

#### 7.19. Appropriate Assessment

#### 7.19.1. Introduction

- 7.19.2. The EU Habitats Directive (92/43/EEC) provides legal protection for habitats and species of European importance by establishing a network of designated conservation areas collectively referred to as Natura 2000 (or 'European') sites. Matters relating to the likely significant effects on a European site are considered in this section of the report under the following headings:
  - Compliance with Article 6(3) of the EU Habitats Directive.
  - The Natura Impact Statement.
  - Screening the need for Appropriate Assessment.
  - Appropriate Assessment.

#### 7.19.3. Compliance with Articles 6(3) of the EU Habitats Directive:

7.19.4. The Habitats Directive deals with the Conservation of Natural Habitats, 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.

- 7.19.5. The proposed development is not directly connected with or necessary to the management of a European site. The Board will note that a Natura Impact Statement (NIS) was submitted as part of the documentation for permission for the proposed development to assess the likely or possible significant effects, if any, arising from the proposed development on any European site.
- 7.19.6. In accordance with these requirements, the Board, as the competent authority, prior to granting consent, must be satisfied that the proposal, individually or in combination with other plans or projects, is either not likely to have a significant effect on any European Site or adversely affect the integrity of such a site, in view of the site(s) conservation objectives.
- 7.19.7. Guidance on Appropriate Assessment is provided by the EU and the NPWS in the following documents:
  - Assessment of plans and projects significantly affecting Natura 2000 sites methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2001).
  - Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (DoEHLG), 2009.
- 7.19.8. Both documents provide guidance on Screening for Appropriate Assessment and the process of Appropriate Assessment itself.

#### 7.19.9. Natura Impact Statement

- 7.19.10. The application was accompanied by a Natura Impact Statement (NIS, prepared in April 2023), which examined the potential impacts of the proposed development on the following European Sites:
  - Connemara Bog Complex SPA (Site Code: 004181)
  - Lough Corrib SPA (Site Code: 004042)
- 7.19.11. The NIS identified and characterised the possible implications of the proposed development on these Natura 2000 European sites, in view of the site's conservation objectives, and provided information to enable the Board to carry out an Appropriate Assessment of the proposed works. The NIS also considered the potential impacts of

other wind farm developments in the vicinity, including Ardderroo Wind Farm, Galway Wind Park, and other smaller-scale projects and felling operations.

- 7.19.12. The NIS outlines the assessment methodology employed to identify and assess the potential impacts on habitats and species identified as qualifying interests of European Sites and their conservation objectives, including cumulative / in-combination impacts (Section 4.3). The NIS sets out mitigation measures by avoidance and design, and during the construction, operation and decommissioning phases of the proposed development (Sections 5.1, 5.2, and 5.3).
- 7.19.13. The assessment for the proposed development investigates the potential adverse effects on the qualifying interests of European Sites arising from the proposals. It considers whether the Proposed Development works and operation, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset adverse effects.
  - 7.19.14. Having reviewed the NIS and the supporting documentation, I am satisfied that it provides adequate information with respect to the baseline conditions, clearly identifies the potential impacts, and uses the best scientific information and knowledge. Details of mitigation measures are summarised in Section 5 of the NIS. I am generally satisfied that the information is sufficient to allow for an Appropriate Assessment of the proposed development.

# 7.20. Screening for Appropriate Assessment

#### 7.20.1. 13.4.1. Overview of Screening Report

7.20.2. The Screening Report considered Natura 2000 sites within a 15km radius, the likely zone of impact, of the subject site. A total of eight Natura 2000 sites are noted to be located within this zone, with Table 4-1 of the Report to inform Screening for Appropriate Assessment presenting the list of the sites and their qualifying features of conservation interest. These include the following: Lough Corrib SAC (Site Code: 000297), Gortnandarragh Limestone Pavement SAC (001271), Galway Bay Complex SAC (000268), Connemara Bog Complex SAC (002034), Ross Lake And Woods SAC (001312), Lough Corrib SPA (004042), Inner Galway Bay SPA (004031), and Connemara Bog Complex SPA (004181). Each site was examined in the context of its

location in terms of the zone of influence of effect from the proposed development and their relevant Special Conservation Objectives.

#### 7.20.3. Evaluation of European Sites

7.20.4. The AA Screening Report employs the 'source-pathway-receptor' model to evaluate the potential impacts of the proposed wind farm development on nearby European sites. Its findings are summarised as follows:

Lough Corrib SAC (Site Code: 000297): Located 6.4km from the wind farm site, the report concludes that, due to remote indirect connectivity via an unnamed stream, there are no anticipated likely significant effects on the qualifying interest features of Lough Corrib SAC. Accordingly, this SAC is screened out from further assessment or mitigation.

**Gortnandarragh Limestone Pavement SAC (Site Code: 001271)**: Located 4.8km from the wind farm site, similar reasoning applies to Gortnandarragh Limestone Pavement SAC. Given the lack of hydrological and hydrogeological pathways connecting it to the project, the report concludes there will be no likely significant impacts on its qualifying interest features, leading to its exclusion from further considerations.

Galway Bay Complex SAC (Site Code: 000268): Located 12.2km from the wind farm site, the report concludes that, due to remote and indirect connectivity via an unnamed stream, there are no anticipated likely significant effects on the qualifying interest features of Galway Bay Complex SAC. This SAC is screened out from further assessment or mitigation.

**Connemara Bog Complex SAC (Site Code: 002034)**: Located 0.12km from the wind farm site, the report concludes that, due to indirect connectivity via an unnamed watercourse, there are no anticipated likely significant effects on the qualifying interest features of Connemara Bog Complex SAC. This SAC is screened out from further assessment or mitigation.

**Ross Lake and Woods SAC (Site Code: 001312)**: Located 2.6km from the wind farm site, the report concludes that, due to indirect connectivity via an unnamed stream, there are no anticipated likely significant effects on the qualifying interest features of

Ross Lake and Woods SAC. This SAC is screened out from further assessment or mitigation.

Lough Corrib SPA (Site Code: 004042): Located 7.4km from the wind farm site, the report identifies potential ex-situ disturbance and habitat loss effects on Hen Harrier and Golden Plover due to ecological connectivity. This SPA requires further assessment.

Inner Galway Bay SPA (Site Code: 004031): Located 13.1km from the wind farm site, the report concludes that, due to remote and indirect connectivity via an unnamed stream, there are no anticipated likely significant effects on the qualifying interest features of Inner Galway Bay SPA. This SPA is screened out from further assessment or mitigation.

**Connemara Bog Complex SPA (Site Code: 004181)**: Located 4.8km from the wind farm site, the report identifies potential ex-situ disturbance and habitat loss effects on Golden Plover, Cormorant, and Common Gull due to ecological connectivity. This SPA requires further assessment.

# 7.20.5. Potential for In-Combination Effects

7.20.6. The potential for in-combination effects with other projects is specifically noted for the Lough Corrib SPA and Connemara Bog Complex SPA, highlighting the importance of considering cumulative impacts.

# 7.20.7. Screening Conclusion

7.20.8. Having reviewed the Screening Report and the supporting documentation, which provides adequate information regarding the baseline conditions, clearly identifies the potential impacts, and uses the best scientific information and knowledge, together with the information available on the NPWS website, the scale and nature of the proposed development and likely effects, separation distance and functional relationship between the proposed works and the European sites, their conservation objectives and taken in conjunction with my inspection of the site and the surrounding area, I am satisfied that the Lough Corrib SAC, Gortnandarragh Limestone Pavement SAC, Galway Bay Complex SAC, Connemara Bog Complex SAC, Ross Lake And Woods SAC, and Inner Galway Bay SPA can be screened out from further

assessment. Furthermore, in the absence of hydrological and hydrogeological connection between the project site and these SACs and SPAs, I am of the view that there would not be any likely significant effects from the proposed development alone, and in combination with other plans or projects on these sites. A Stage 2 Appropriate Assessment is not required for these Natura 2000 European Sites.

- 7.20.9. In the absence of mitigation measures, the following sites are deemed to have the potential to be impacted by the proposed development and require Stage 2 Appropriate Assessment:
  - Lough Corrib SPA (Site Code: 004042)
  - Connemara Bog Complex SPA (Site Code: 004181)

# 7.21. Stage 2 Appropriate Assessment

7.21.1. The Conservation Objectives and Qualifying Interests, including any relevant attributes and targets for the relevant European Sites, are set out below.

Table 1: European Sites and their cor	nnectivity to the site
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European sites	Qualifying Interests	Direct line distance to the site	Links
Connemara Bog	[A017] Cormorant (Phalacrocorax carbo)	4.8km	Ecological
Complex SPA	[A098] Merlin (Falco columbarius)		
Site Code: 004181	[A140] Golden Plover (Pluvialis apricaria)		
	[A182] Common Gull (Larus canus)		
Lough Corrib SPA	[A051] Gadwall (Anas strepera)	7.4km	Ecological
Site Code: 004042	[A056] Shoveler (Anas clypeata)		
	[A059] Pochard (Aythya ferina)		
	[A061] Tufted Duck (Aythya fuligula)		
	[A065] Common Scoter (Melanitta nigra)		
	[A082] Hen Harrier (Circus cyaneus)		
	[A125] Coot (Fulica atra)		
	[A140] Golden Plover (Pluvialis apricaria)		
	[A179] Black-headed Gull (Chroicocephalus ridibundus)		
	[A182] Common Gull (Larus canus)		
	[A193] Common Tern (Sterna hirundo)		
	[A194] Arctic Tern (Sterna paradisaea)		
	[A395] Greenland White-fronted Goose (Anser albifrons flavirostris)		
	[A999] Wetlands		

#### 7.21.10. Description of European Sites

7.21.11. A description of the 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.

#### 7.21.11.1. Connemara Bog Complex SPA (Site Code: 004181):

7.21.12. The Connemara Bog Complex Special Protection Area (SPA) encompasses extensive tracts of western blanket bog, heath, woodland, lakes, rivers, and streams. This site supports nationally important populations of several bird species, including Cormorant, Merlin, Golden Plover, and Common Gull. These species rely on the varied habitats within the SPA for breeding, foraging, and roosting. The SPA's conservation objectives aim to maintain or restore the favourable conservation condition of these bird populations by preserving their habitats and minimising disturbances. Threats to the SPA include habitat degradation, overgrazing, and human disturbance, which can impact the site's ecological integrity. The NIS identifies that the proposed development would not directly impact the SPA but assesses potential indirect impacts such as disturbance, displacement, and collision risks for the qualifying bird species.

# 7.21.12.1. Lough Corrib SPA (Site Code: 004042)

7.21.13. Lough Corrib SPA is the largest lake in the Republic of Ireland and supports a diverse range of waterfowl species. The lake's habitats, including mesotrophic waters, reed swamps, and surrounding wetlands, provide crucial feeding and breeding grounds for species such as Gadwall, Shoveler, Pochard, Tufted Duck, Common Scoter, Hen Harrier, and Golden Plover. The conservation objectives for Lough Corrib SPA focus on maintaining or restoring the favourable conservation condition of these species and their habitats. Threats to the SPA include dispersed habitation, invasive non-native species, and human disturbance, which can affect habitat availability. The NIS evaluates potential impacts from the Proposed Development, particularly in terms of habitat loss, disturbance, displacement, and collision risk that could affect the SPA's qualifying interests, specifically Hen Harrier and Golden Plover.

#### 7.21.13.1. Conservation Objectives

- 7.21.14. The Conservation Objectives for the Connemara Bog Complex SPA and the Lough Corrib SPA note that the overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. The favourable conservation status of a habitat is achieved when:
  - Its natural range, and the area it covers within that range, are stable or increasing, and
  - The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
  - The conservation status of its typical species is favourable.
- 7.21.15. The favourable conservation status of a species is achieved when:
  - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
  - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
  - There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

# 7.21.15.1. Detailed Conservation Objectives for Connemara Bog Complex SPA (004181)

- 7.21.16. The detailed Conservation Objectives for the Connemara Bog Complex SPA, as included in the NPWS Conservation Objectives Series for the site dated January 2023, aim to maintain or restore the favourable conservation condition of the Annex I species for which the SPA has been designated. These objectives include:
  - To maintain the favourable conservation condition of Cormorant, Merlin, Golden Plover, and Common Gull in Connemara Bog Complex SPA.

# 7.21.16.1. Detailed Conservation Objectives for Lough Corrib SPA (004042)

7.21.17. The Conservation Objectives for the Lough Corrib SPA, included in the NPWS Conservation Objectives Series for the site dated January 2023, also aim to maintain

or restore the favourable conservation condition of the Annex I species for which the SPA has been designated. These objectives include:

- To maintain the favourable conservation condition of Gadwall, Shoveler, Pochard, Tufted Duck, Common Scoter, Hen Harrier, Coot, Golden Plover, Black-headed Gull, Common Gull, Common Tern, Arctic Tern, and Greenland White-fronted Goose in Lough Corrib SPA.
- 7.21.18. Having regard to the NPWS Conservation Objectives and associated maps for the SPA, together with the information presented in the NIS, there are several QI bird species which are noted to be sensitive to changes in their habitats, including water quality, and which have the potential to be impacted by the proposed development. These QIs, together with their main Attributes and Targets, are summarised below.

# 7.21.18.1. Summary of NPWS Conservation Objectives, Attributes, and Targets for QI Species Sensitive to Changes

Species Code	Species Name	Conservation Objective	Attributes and Targets
A017	Cormorant (Phalacrocorax carbo)	Maintain the favourable conservation	Breeding population size stable or
		condition	increasing, suitable nesting sites,
			disturbance levels, and prey
			biomass available
A098	Merlin (Falco columbarius)	Maintain the favourable conservation	Breeding population size stable or
		condition	increasing, suitable nesting sites,
			disturbance levels, sufficient
			foraging habitat.
A140	Golden Plover (Pluvialis apricaria)	Maintain the favourable conservation	Habitat availability, prey biomass,
		condition	disturbance levels, and no significant
			decline in population size
A182	Common Gull (Larus canus)	Maintain the favourable conservation	Stable breeding population,
		condition	distribution of breeding habitat,
			forage biomass, and no increase in
			disturbance or barriers to
			connectivity
A082	Hen Harrier (Circus cyaneus)	Maintain the favourable conservation	Roost attendance, forage area
		condition	spatial distribution and abundance,
			roost spatial distribution and extent,
			disturbance at roost site
A051	Gadwall (Anas strepera)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A056	Shoveler (Anas clypeata)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species

A059	Pochard (Aythya ferina)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A061	Tufted Duck (Aythya fuligula)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A065	Common Scoter (Melanitta nigra)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A125	Coot (Fulica atra)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A179	Black-headed Gull (Chroicocephalus	Maintain the favourable conservation	Stable population size, suitable
	ridibundus)	condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A193	Common Tern (Sterna hirundo)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A194	Arctic Tern (Sterna paradisaea)	Maintain the favourable conservation	Stable population size, suitable
		condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species
A395	Greenland White-fronted Goose	Maintain the favourable conservation	Stable population size, suitable
	(Anser albifrons flavirostris)	condition	breeding and foraging habitats,
			disturbance levels, and water quality
			suitable for supporting the species

# 7.21.19. Description of the proposed development and its likely potential significant effects

- 7.21.20. The proposed amendments to the permitted wind farm (11 turbines) include alterations to the turbine dimensions and an associated increase in turbine foundations. Each turbine will feature a three-bladed, horizontal axis configuration and will be supported by a foundation approximately 24m in diameter and 3.4m in depth. The proposed development also includes the omission of the previously approved on-site 110kV substation and underground cabling. Instead, it will involve the provision of underground electrical (33kV) and communications cabling connecting the 11 wind turbines to the Ardderroo wind farm substation. This connection would facilitate the transmission of generated electricity from the wind farm to the national grid. The project proposes to upgrade and widen internal access tracks to facilitate the construction, maintenance, and eventual decommissioning of turbines. Utilising the site's existing forestry access networks, these tracks would be widened to c. 5 meters, with adjustments for bends, and surfaced with well-graded aggregate. Upgrades would include maintaining and improving existing drainage, with new track construction utilising a hardcore atop a geotextile membrane, layered and compacted stone, side drainage, and habitat restoration with surplus materials. Stone for new roads would be sourced from local quarries. Additionally, the development includes the extension of the Ardderroo substation within the existing substation compound. This extension would encompass a control building extension of c. 75 m<sup>2</sup>, a new 110kV transformer, and additional electrical plant and apparatus. To support the proposed development, site drainage works and tree felling would be carried out as necessary. The drainage works would ensure the management of water runoff, preventing erosion and sedimentation issues, while the tree felling would accommodate the infrastructure improvements and turbine installations.
- 7.21.21. The proposed turbine delivery route for the wind farm begins at Galway Port, utilising major roadways and existing infrastructure to facilitate the transportation of turbine components. The delivery route was selected for its optimality in delivering turbines to the site efficiently and with minimal disruption.
- 7.21.22. The proposed wind turbine layout would include several internal track crossings designed to adhere to OPW standards. For the cable routes, multiple watercourses would be crossed, with methodologies such as piped culverts, depending on cover availability.

These methodologies would be determined on a case-by-case basis in compliance with local authority and ESB requirements.

7.21.23. The wind farm's electrical cabling system involves collecting electricity from all turbine clusters through buried 33kV medium voltage cable circuits along onsite access tracks and the public roadway, culminating at the Ardderroo wind farm substation. This system would ensure efficient and reliable transmission of generated electricity to the grid, adhering to EirGrid requirements. Installation specifics are outlined in the CEMP, including the construction of joint bays for the 33kV collector cable. These joint bays would facilitate the joining of cables and fibre-optic communications, positioned according to EirGrid's detailed design stage guidelines.

#### 7.21.24. Potential Significant Effects

7.21.25. The NIS identifies several Qualifying Interests/Special Conservation Interests (QIs/SCIs) linked to identified Natura 2000 sites that might be impacted by the proposed development, as detailed in the report. For the Connemara Bog Complex SPA and Lough Corrib SPA, these interests include various bird species such as Cormorant, Golden Plover, Common Gull, and Hen Harrier. The potential effects on the integrity of the identified European Sites 'Alone' are considered in terms of hydrological and ecological connectivity for both SPAs. Findings are summarised as follows:

# 7.21.25.1. Connemara Bog Complex SPA:

- 7.21.26. The NIS evaluates potential impacts from the proposed development on the Connemara Bog Complex SPA, particularly concerning habitat loss, disturbance, roosting, and foraging for avian species. In terms of habitat loss, the NIS identifies that the proposed development is not located within the Connemara Bog Complex SPA, and therefore, there would be no direct habitat loss within the SPA itself. However, the development could potentially lead to indirect habitat impacts due to construction activities and increased human presence.
- 7.21.27. The NIS addresses potential disturbances to bird species such as the Cormorant, Golden Plover, and Common Gull. The assessment concludes that no significant adverse effects are anticipated regarding displacement, as few commuting birds were recorded over the study area. Collision risks were assessed, with the conclusion that the magnitude of effect is negligible for these species, given the low number of observations and

calculated collision ratios. For Cormorant, the NIS notes that no breeding evidence was found within the study area, and the habitats present are unsuitable for breeding or foraging. Therefore, there would be no direct habitat loss or significant disturbance. Regarding Golden Plover, the NIS surveys found no evidence of breeding within the study area. The species was observed in non-breeding seasons, and no significant habitat loss is anticipated. The development would not result in significant adverse effects on displacement or discourage flight activity and foraging. For Common Gull, the NIS reports limited observations during surveys. The collision risk for this species is calculated as negligible, and the development would not result in significant displacement or habitat loss.

7.21.28. In terms of ecological connectivity, the NIS highlights that the mobile QI species of the Connemara Bog Complex SPA, including Cormorant, Golden Plover, and Common Gull, would not be significantly impacted by the proposed development. The assessment concludes that the conservation objectives for these species within the SPA are unlikely to be compromised.

#### 7.21.28.1. Lough Corrib SPA:

- 7.21.29. The NIS evaluates potential impacts on Lough Corrib SPA, specifically focusing on Hen Harrier and Golden Plover, both of which are listed as Special Conservation Interests (SCIs). For Hen Harrier, the NIS reports a few observations during site surveys, with no breeding or roosting sites recorded within the study area. The loss of foraging habitat is considered insignificant, with substantial areas of undisturbed habitat remaining. The collision risk for Hen Harrier is assessed as negligible.
- 7.21.30. The NIS discusses Golden Plover, noting suitable breeding habitat within the EIAR study area but no evidence of breeding during surveys. Observations were limited to winter and early spring, and no significant adverse effects are anticipated regarding habitat loss, displacement, or collision risk. The NIS concludes that the proposed development would not prevent or obstruct Hen Harrier or Golden Plover from reaching or maintaining favourable conservation status within the SPA, in accordance with Article 1 of the EU Habitats Directive.

# 7.21.31. Cumulative and In Combination effects

- 7.21.32. The NIS provides a "Cumulative/In-Combination" effects analysis of the proposed development together with an analysis of other Plans or projects. Notable projects include:
  - Ardderroo Wind Farm: Located c. 27m from the proposed development, this wind farm includes significant land use primarily in commercial forestry. The project did not identify significant negative residual effects on any ecological receptors.
  - Galway Wind Park Cloosh: Approx. 4.3km west, this wind farm consists of 69 turbines (60 constructed) and did not identify significant negative residual effects on any ecological receptors.
  - Galway Wind Park Uggool: Located 2.6km northwest, this site features habitats of conservation value such as Active Blanket Bog Wet Heath. The project did not identify significant negative residual effects on any ecological receptors.
  - Galway Wind Park Seecon: Situated 5.2km southwest, this development site is dominated by commercial forestry plantation. Surveys recorded several Annex I bird species, but no significant negative residual effects were identified.
  - Lettercraffroe Wind Farm: Approximately 7.3km northwest, the predominant habitat within this site includes coniferous plantation and other habitats of ecological significance. The project did not identify significant negative residual effects on any ecological receptors.
  - Knockalough Wind Farm: Located 3km south, this site is dominated by conifer plantation, with significant habitats noted. The project did not identify significant negative residual effects on any ecological receptors.
  - Leitir Gungaid (Lettergunnet) Wind Farm: Approximately 6.9km south-southeast, this site includes habitats such as blanket bog and wet heath. The project did not identify significant negative residual effects on any ecological receptors.
  - Letterpeck (Shannagurran & Truskaunngappul) Wind Farm: Situated 5.3km south, the site is dominated by cutover bog, with Annex I habitats also present. The project did not identify significant negative residual effects on any ecological receptors.
- 7.21.33. Other significant projects considered include the proposed N59 Maigh Cuilinn (Moycullen) Bypass Road Project, currently under construction, and the Connemara Greenway, which received permission from An Bord Pleanála in 2013. The search did not identify any potential for significant cumulative impacts with these projects.

- 7.21.34. Selected smaller projects within 2.5km, such as planning permissions for residential and agricultural developments, were also reviewed. These included planning permission for the erection of a dwelling house and garage (2.25km south), construction of a new storage shed (1.5km south), and various domestic sheds. No potential for significant cumulative impacts with these projects was identified. Ongoing felling operations in the area, including a Coillte felling programme and proposed bog restoration plan within the Ardderroo Wind Farm boundary, were considered. These operations are subject to Appropriate Assessment and are required to adhere to the Standards for Felling and Reforestation (DAFM, 2019).
- 7.21.35. The cumulative impact assessment concluded that no potentially significant residual disturbance, displacement, or habitat loss effects were reported for any receptors within any of the nearby wind farms and other projects reviewed. Taking into consideration the reported residual effects from other plans and projects in the area and the predicted effects with the Proposed Development, no residual cumulative effects have been identified concerning any European Sites.

#### 7.21.36. Mitigation Measures

- 7.21.37. Section 5 of the NIS outlines mitigation measures to avoid potential impacts on the QIs/SCIs habitats and species during the construction, operational, and decommissioning phases. These measures are developed in accordance with national and international guidelines, which include the following;
  - A project ecologist would oversee the implementation of mitigation measures.
  - Conifer felling would occur outside the breeding bird season.
  - An ecological restoration and enhancement management plan would be implemented.
  - A bird survey monitoring program would focus on species of special conservation interest during the wind farm's operation.
  - The Construction Environment Management Plan (CEMP) includes measures for noise and dust control, site drainage, peat stability monitoring, and waste management.

- Principles of silt management and pollution prevention would inform the detailed drainage design.
- A detailed implementation plan outlining roles and responsibilities would be in place.
- A water monitoring program during various project phases.
- Training for site personnel on environmental protection measures.
- An Emergency Response Plan for site health and safety and environmental protection.
- Compliance with the CEMP would be reviewed through proposals categorised into pre-commencement, construction-phase, and operational-phase measures.
- 7.21.38. During the operational phase, all mitigation and monitoring for avifauna will follow the NIS for the Permitted Development. During the decommissioning phase, no new impacts on the SCI of Connemara Bog Complex SPA or Lough Corrib SPA have been identified, and no specific mitigation measures are required.

#### 7.21.38.1. Integrity Test

7.21.39. Following the appropriate assessment and the consideration of mitigation measures, I am able to ascertain with confidence that the proposed development would not adversely affect the integrity of the Connemara Bog Complex Special Protection Area (SPA) or the Lough Corrib Special Protection Area (SPA), in view of the Conservation Objectives of those sites. This conclusion has been based on a complete assessment of all implications of the project alone and in combination with plans and projects. Table 3 below summarises the appropriate assessment and site integrity test.

# 7.21.40. Table 3: Appropriate Assessment Summary: Impacts on European Sites and Conservation Objectives

European Site and Code	Qualifying Interests (QIs)	Conservation Objectives: Targets and	Potential Adverse Effects	Mitigation Measures	In-Combination Effects	Can Adverse Effects on Integrity Be Excluded?
Connemara Bog Complex SPA (004181)	Cormorant, Golden Plover, Common Gull, Merlin	Maintain or restore the favourable conservation condition of habitats and species; specific conditions for habitats and species such as population size, distribution, and habitat availability.	Displacement effects, habitat loss, collision risk, potential water quality impacts	Implement strict erosion and sediment control practices. Adhere to Construction Environment Management Plan (CEMP) and Surface Water Management Plan (SWMP). Use Sustainable Drainage Systems (SuDS) for runoff management. Establish vegetation on exposed soil quickly. Install silt traps and sediment basins. Regular checks on machinery to prevent leaks.	No significant in- combination effects identified.	Yes, with implementation of mitigation measures.

Lough Corrib	Hen Harrier, Golden	Maintain or restore	Displacement	Implement strict	No significant in-	Yes, with
SPA (004042)	Plover	the favourable	effects, habitat	erosion and	combination effects	implementation of
		conservation	loss, collision risk,	sediment control	identified.	mitigation measures.
		condition of habitats	potential water	practices. Adhere		
		and species;	quality impacts	to CEMP and		
		specific conditions		SWMP. Use SuDS		
		for habitats and		for runoff		
		species such as		management.		
		population size,		Establish		
		distribution, and		vegetation on		
		habitat availability.		exposed soil		
				quickly. Install silt		
				traps and sediment		
				basins. Regular		
				checks on		
				machinery to		
				prevent leaks.		
Overall	Following the impleme	ntation of mitigation, the	e construction and ope	eration of this proposed	d development will not a	adversely affect the
Conclusion:	integrity of the Conner	nara Bog Complex SPA	or the Lough Corrib S	SPA, and no reasonabl	e doubt remains as to	the absence of such
Integrity Test	effects.					

#### 7.21.41. Appropriate Assessment Conclusion

- 7.21.42. The proposed development has been considered in light of the assessment requirements of Sections 177U and 177V of the Planning and Development Act 2000, as amended.
- 7.21.43. Having carried out screening for Appropriate Assessment of the project, it was concluded that the proposed development may have a significant effect on the Connemara Bog Complex SPA (Site Code: 004181) and the Lough Corrib SPA (Site Code: 004042). Consequently, an Appropriate Assessment was required to determine the implications of the project on the qualifying features of those sites in light of their conservation objectives.
- 7.21.44. 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 European site Nos. 004181 and 004042 or any other European site, in view of the sites' Conservation Objectives.
- 7.21.45. This conclusion is based on a full and detailed assessment of all aspects of the proposed development, including proposed mitigation measures in relation to the Conservation Objectives of these European sites and an assessment of likely incombination effects with other plans and projects. No reasonable scientific doubt remains as to the absence of adverse effects on the integrity of these European Sites.

# 8.0 **Recommendation**

8.1. I recommend that permission is granted subject to the following conditions-

# 9.0 Reasons and Considerations

#### 9.1.1. Having regard to;

- the policies and objectives set out in the Galway County Development Plan 2022-2028,
- (ii) the Northern and Western Regional Spatial and Economic Strategy 2020-2032,
- (iii) the provisions of the Climate Action Plan 2024, 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.

# 10.0 Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, as amended by the further plans and particulars submitted on the 26th day of October 2023 and by the further plans and particulars received by An Bord Pleanála on the 15th day of December 2023 except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed upon with the planning authority, the developer shall agree to such details in writing with the planning authority prior to the commencement of development, and the development shall be carried out and completed in accordance with the agreed-upon particulars. **Reason:** In the interest of clarity. 2. Apart from any departures specifically authorised by this permission, the development shall be carried out and completed in accordance with the terms and conditions of the permission granted on 19/02/2016 under appeal reference number ABP Ref 07.243094, planning register reference number 13/829, and any agreements entered into thereunder.

	Reason: In the interest of clarity.
3.	The period during which the development hereby permitted is constructed
	shall be 10 years from the date of this order.
	Reason: In the interests of clarity.
4.	All of the environmental, construction and ecological mitigation measures
	set out in the Environmental Impact Statement, the Natura Impact
	Statement, as revised, and other particulars submitted with the application
	and in the further information submitted to the planning authority on the
	26th day of October 2023, and to An Bord Pleanála on the 15th day of
	December 2023, shall be implemented by the developer in conjunction with
	the timelines set out therein, except as may otherwise be required in order
	to comply with the conditions of this order.
	Reason: In the interest of clarity and the protection of the environment
	during the construction and operational phases of the development.
5.	(a) The permitted turbines shall have a maximum tip height of 150 metres.
	Details of the turbine design, height, and colour shall be submitted to and
	agreed upon in writing with the planning authority prior to the
	commencement of development.
	(b) Cables from the turbines to the Ardderroo wind farm substation shall be run underground.
	(c) The wind turbines shall be geared to ensure that the blades rotate in the same direction.
	(d) Transformers associated with each individual turbine and mast shall be
	located either within the turbine mast structure or at ground level beside the mast.
	(e) No advertising material shall be placed on or otherwise affixed to any
	structure on the site without a prior grant of planning permission.
	(f) The access tracks within the site shall be surfaced in a suitable material
	acceptable to the planning authority and shall not be hard-topped with tarmacadam or concrete.

	(g) Roads, hard-standing areas and other hard-surfaced areas shall be
	completed to the written satisfaction of the planning authority within three
	months of the date of commissioning of the wind farm.
	(h) Soil, rock, and other materials excavated during construction shall not
	be left stockpiled on site after the completion of the work. Excavated areas,
	including the borrow pits and areas of peat placement, shall be
	appropriately restored within three months of the date of commissioning of
	the wind farm, in accordance with details to be submitted to and agreed in
	writing with the planning authority.
	Reason: In the interest of the amenities of the area.
6.	Removal of site vegetation shall be carried out outside of the breeding
	season for the Marsh Fritillary Butterfly (Euphydryas Aurinia).
	Reason: As a precautionary measure in the interest of protecting the
	species.
7.	Details of aeronautical requirements shall be submitted to and agreed in
	writing with the planning authority prior to the commencement of
	development, following consultation with the Irish Aviation Authority. Prior
	to the commissioning of the turbines, the developer shall inform the
	planning authority and the Irish Aviation Authority of the coordinates of the
	as-constructed tip heights and coordinates of the turbines and wind
	monitoring mast.
	<b>Reason</b> : In the interest of air traffic safety.
0	
8.	Noise mitigation measures outlined in the environmental impact statement
	and in the further information submitted to the planning authority shall be
	carried out in full. The following conditions shall be complied with:
	carried out in full. The following conditions shall be complied with: (a) Wind turbine noise arising from the proposed development, by itself or
	<ul><li>carried out in full. The following conditions shall be complied with:</li><li>(a) Wind turbine noise arising from the proposed development, by itself or in combination with other existing or permitted wind energy development in</li></ul>
	carried out in full. The following conditions shall be complied with: (a) 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:
	<ul> <li>carried out in full. The following conditions shall be complied with:</li> <li>(a) 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:</li> <li>5 dB(A) above background noise levels or</li> </ul>
	<ul> <li>carried out in full. The following conditions shall be complied with:</li> <li>(a) 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:</li> <li>5 dB(A) above background noise levels or</li> <li>43 dB(A) L<sub>90,10min</sub></li> </ul>

	when measured externally at dwellings or other sensitive receptors.
	(b) Prior to the commencement of development, the developer shall submit
	to and agree in writing with the planning authority to 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 initial noise compliance monitoring results shall be submitted to and
	agreed upon in writing with the planning authority within six months of
	commissioning the wind farm.
	<b>Reason</b> : In the interest of residential amenity
9.	(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) A report shall be prepared by a suitably qualified person in accordance
	with the requirements of the planning authority, indicating compliance with
	the above shadow flicker requirements at dwellings. Within 12 months of
	the commissioning of the proposed wind farm, this report shall be
	submitted to, and agreed in writing with, the planning authority.
	<b>Reason</b> : In the interest of residential amenity
10	
10.	Prior to the commencement of development, the developer shall agree with
	the planning authority on a protocol for assessing any impact on radio,
	television or other telecommunications reception in the area. In the event of
	interference occurring, the developer shall remedy such interference
	according to a methodology to be agreed in writing with the planning
	authority, following consultation with other relevant authorities and prior to
	commissioning the turbines.
	Reason: In the interest of residential amenity.

11.	(a) Prior to the commencement of development, details of the following
	shall be submitted to and agreed in writing with the planning authority:
	(i) A Transport Management Plan, including details of the road network/haulage routes, the vehicle types to be used to transport materials on and off-site, and a schedule of control measures for exceptional wide and heavy delivery loads.
	(ii) A condition survey of the roads and bridges along the haul routes is to be carried out at the developer's expense by a suitably qualified person both before and after the construction of the wind farm development. This survey shall include a schedule of required work to enable the haul routes to cater to construction-related traffic. The extent and scope of the survey and the schedule of works shall be agreed upon with the planning authority prior to the commencement of development.
	(iii) Detailed arrangements whereby the rectification of any construction damage which arises shall be completed to the satisfaction of the planning authority.
	(iv) Detailed arrangements for temporary traffic arrangements/controls on roads.
	<ul> <li>(v) a programme indicating the timescale within which it is intended to use each public route to facilitate the construction of the development.</li> </ul>
	(vi) The plan should contain details of how the developer intends to engage with and notify the local community in advance of the delivery of oversized loads.
	(b) All works arising from the aforementioned arrangements shall be completed at the developer's expense within 12 months of the cessation of each road's use as a haul route for the proposed development.
	In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.
	Reason: To protect the public road network and to clarify the extent of the
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	permission in the interest of traffic safety and orderly development.
12.	On full or partial decommissioning of the wind farm or if the wind farm
	ceases operation for a period of more than one year, the masts and the
	turbines concerned shall be removed, and all decommissioned structures
	shall be removed, and foundations removed or 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.	The construction of the development shall be managed in accordance with
	a Construction 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 the intended construction
	practice for the development, including:
	(a) Location of the site and materials compound(s) including area(s)
	identified for the storage of construction refuse;
	(b) Location of areas for construction site offices and staff facilities;
	(c) Details of site security fencing and hoardings;
	(d) Details of on-site car parking facilities for site workers during the course
	of construction;
	(e) Measures to obviate queuing of construction traffic on the adjoining
	road network;
	(f) Measures to prevent the spillage or deposit of clay, rubble or other
	debris on the public road network;
	(g) Alternative arrangements to be put in place for pedestrians and vehicles
	in the case of the closure of any public road or footpath during the course
	of site development works;
	(h) Provision of construction hours, including deliveries of materials to the
	site;

	<ul> <li>(i) Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels;</li> </ul>
	(j) Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater;
	(k) Off-site disposal of construction/demolition waste.
	A record of daily checks that the works are being undertaken in accordance with the Construction Management Plan shall be kept for inspection by the planning authority.
	Reason: In the interest of amenities and safety.
14.	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.
	<b>Reason</b> : In the interest of protecting ecology and wildlife in the area.
15.	<b>Reason</b> : In the interest of protecting ecology and wildlife in the area. 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 the 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 <b>Reason:</b> To ensure appropriate monitoring of the impact of the development on the avifauna of the area.
15.	<b>Reason</b> : In the interest of protecting ecology and wildlife in the area. 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 the 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 <b>Reason:</b> To ensure appropriate monitoring of the impact of the development on the avifauna of the area. The developer shall ensure that all plant and machinery used during the works are thoroughly cleaned and washed before delivery to the site to

	Reason: In the interest of the proper planning and sustainable
	development of 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) regarding 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 removal of any archaeological material that the authority
	considers appropriate.
	In default of agreement on any of these requirements, the matter shall be
	referred to An Bord Pleanála for determination.
	<b>Reason</b> : In order to conserve the archaeological heritage of the site and to
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18.	<ul> <li>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.</li> <li>Water supply and drainage arrangements, including the attenuation and disposal of surface water, shall comply with the requirements of the Planning Authority for such works and services.</li> <li>Reason: In the interest of public health.</li> </ul>
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21.	Prior to the 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.
22	Prior to the 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.
	<b>Peacen:</b> In the interest of orderly development and visual amonity and to
	ensure satisfactory reinstatement of the site
23.	The developer shall pay to the planning authority a financial contribution in
	respect of public infrastructure and facilities benefiting development in the
	area of the planning authority that is provided or intended to be provided by
	or on behalf of the authority in accordance with the terms of the
	Development Contribution Scheme made under section 48 of the Planning
	and Development Act 2000, as amended. The contribution shall be paid
	prior to the commencement of development or in such phased payments as
	the planning authority may facilitate and shall be subject to any applicable
	indexation provisions of the Scheme at the time of payment. Details of the

application of the terms of the Scheme shall be agreed upon 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

25<sup>th</sup> July 2024