Inspector's Report

ABP-313750-22

Development	Construction of 20 x turbines and all associated works
Location	Cronin, Skyvalley and adjoining townlands, W of Athlone, Co. Roscommon.
Planning Authority	Roscommon County Council
Applicant(s)	Energia Renewables Ireland Ltd.
Type of Application	Strategic Infrastructure, Section 37E.
Submissions	Roscommon County Council Transport Infrastructure Ireland DAU/NPWS Geological Survey Ireland Wind Turbine Action Group South Roscommon Skeavally Wind Turbine Action Group Mairead Farrell & Christopher Walsh Celia & Tony Concannon Ciara Farrell, Esq.

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Date of Site Inspection: 25th & 26th October 2022

22nd & 23rd June 2023

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1.0 INTRODUCTION

1.1 Introduction

Energia Renewables Ltd. is seeking planning permission to erect a 20 x turbine windfarm and associated works in 2 x clusters at the townlands of Cronin and Skyvalley in County Roscommon.

1.2 Project Background

Energia Renewables Ltd. requested pre-application consultations with the Board under Section 37B of the Planning and Development Act, 2000 (as amended) for the construction of 21 x wind turbines with a combined output in excess of 50MW (ABP-307075-20). Two pre-application meeting took place in 2020 after which the prospective applicant requested closure of the process. The Board, in a letter dated 1st July 2021, determined that consultations were closed, that the project constituted strategic infrastructure, and that an application should be made directly to the Board. The records of the pre-application meetings, copied to the applicants, also contained a list of Prescribed Bodies that copies of the application should be forwarded to. This application comprises the proposed windfarm and associated works.

1.3 Site and location

The site of the proposed development comprises two separate rural sites located in the townlands of Cronin and Skyvalley (Skeavally) approximately 11km to the W of Athlone in Co. Roscommon and c.15km N of Ballinasloe in Co. Galway. The two sites are located to the NE and SE of Dysert Village, to E of the R357 road to Ballinasloe, and N and S of the R363 road to Athlone. The surrounding slightly elevated and moderately undulating rural landscape is characterised by agricultural fields to the N, and agricultural fields with rocky outcrops and hills to the S. The fields are defined by mature hedgerows and stone walls. There are several detached houses and farm buildings in the vicinity. There is an existing temporary met mast at Skyvalley. Vehicular access to both sites is off the R357 to the N and S.

The River Suck Callows SPA and NHA is located c.3.5km to the W and there are several other natural heritage sites in the surrounding area which are designated for turloughs, lakes, bogs, grasslands, rivers and waterbirds. The SW section of the S

Cluster lies within the Killeglan Karst Landscape, and adjacent to the Killeglan Grassland SAC on the W side of the R357.

There are also several features of archaeological interest in the surrounding and wider area (incl. Ringforts, Mounds, Barrows & Enclosures). The Clonmacnoise Monastic Complex is located c.18km to the SE of the site, and the Rathcroghan Archaeological Complex is located over c.30km to the NW.

There are several scenic routes and protected views in the wider area (incl. across Lough Ree) which include sites in the neighbouring counties of Longford and Offaly. There are several other permitted and operational windfarms in the wider area.

Photographs and maps on file describe the site and location in detail.

1.4 Pre-Application Consultation

ABP-307075-20: The Board's Notice to the applicants under Section 37B (4) (a) of the Planning and Development Act 2000 (as amended) confirmed that the proposed development would constitute strategic infrastructure. The records of the pre-application meetings were copied to the applicants.

1.5 Planning history

ABP PL20.244346: permission refused for a 16 x turbine windfarm at Cronin and adjoining townlands following a Third Party appeal and subsequent JR of the Board's original decision to grant permission. Permission was refused for 1 x reason related to the absence of adequate data to assess potential adverse impacts on turloughs and their inter-connectivity several SPAs and their QI bird species.

ABP PL20.244347: permission refused for a 19 x turbine windfarm at Skyvalley and adjoining townlands following a Third Party appeal and subsequent JR of the Board's original decision to grant permission. Permission was refused for the same reason.

The Boards single reason for refusal stated the following: -

> On the basis of the information provided with the application and appeal, including the Environmental Impact Statement (EIS) and the Natura Impact Statement (NIS) contained therein (Appendix 7.2) and subsequent revisions

to the NIS submitted to the planning authority with additional information on the 10th day of August, 2011 and the later revision of June 2012 and also including the additional information submitted to An Bord Pleanála on the 6th day of June, 2013 and on the 18th day of May 2015, the Board is not satisfied, having regard to the precautionary principle, that there is reasonable scientific certainty that the proposed development would not adversely affect the integrity of European Sites in the vicinity in the light of the conservation objectives and qualifying interests for which these sites were designated.

In particular, it is considered that the hydrogeological and geotechnical investigations carried out do not demonstrate to a reasonable level of scientific certainty that the excavations and construction works required to carry out the development would not adversely impact on the turloughs which are qualifying interests of the Lough Croan Turlough Special Area of Conservation (site code 000610), the Four Roads Turlough Special Area of Conservation (site code 001637) and the Lisduff Turlough Special Area of Conservation (site code 000609).

It is also considered that it has not been demonstrated beyond reasonable scientific doubt that the development would not contravene the conservation objectives for some of the qualifying interests of the nearby Special Protection Areas. In particular, it is considered that there is a risk of contravening the conservation objectives for Greenland White Fronted Goose at Lough Croan Special Protection Area (site code 004139) and other Special Protection Areas, Golden Plover at Lough Croan Special Protection Area and other Special Protection Areas, and Lapwing at the River Suck Callows Special Protection Area (site code 004097) and other Special Protection Areas. There is also uncertainty in relation to the impact on the conservation objectives for Whooper Swans at the River Suck Callows Special Protection Area (site code 004097), and Black Headed Gulls at the Middle Shannon Callows Special Protection Area (site code 004096).

It is considered that inadequate surveys and investigations have been carried out in relation to day and night movements, flight lines and foraging activities of Golden Plover and Lapwing. Having regard to the uncertainty which exists, in relation to the impact of the development on the qualifying interests and

consequently the integrity of the European Sites in the area, the Board is precluded from granting planning permission by reason of Article 6(3) of the EU Habitats Directive and of Section 177V (3) of the Planning and Development Act 2000, as amended.

The second reason for refusal recommended by the Inspector stated: -

The development would be out of character in the landscape and would seriously detract from the visual amenities of the area.

The Board's consideration of the second recommended reason referred to: -

The Development Plan description of the receiving landscape as being of moderate value which the Board considered to be robust and capable of accommodating the windfarm, and that the lands lay within a "most favoured" area for renewable energy in the RES.

2.0 PROPOSED DEVELOPMENT

2.0 Documentation

The ***application documentation*** includes the following: -

- Planning Report
- Planning Drawings & Photomontages
- Environmental Impact Assessment Report
    - Non-Technical Summary
    - Technical appendices
- Natura Impact Statement
- Biodiversity Mitigation & Enhancement Plan

The EIAR was supported by Technical Appendices which included: -

- Appendix 4.9: CEMP
- Appendix 6.1: Botanical surveys
- Appendix 6.2: Bat surveys
- Appendix 6.4: Aquatics & Fisheries surveys
- Appendix 7.1-6: Bird surveys
- Appendix 7.7: Avian Collision Risk Model
- Appendix 9.1: Flood Risk Assessment
- Appendix 9.6: Water Framework Directive Assessment
- Appendix 10: Carbon Calculations
- Appendix 11: Noise surveys & analysis
- Appendix 12: Visual assessments & maps

The applicant's ***response to the Submissions*** includes the following: -

- Maps of Turloughs
- Updated Collision Risk Monitoring (Winter 2012-22)
- Bird Survey Report (Non-breeding season 2021-22)
- Nocturnal Golden Plover Survey (Winter 2021-22)

The applicant's ***response to the FI request*** includes the following documentation: -

- DAU/NPWS bird survey data.
- Bird survey data analysis.

2.2 Development Description

The proposed windfarm development would comprise a 20-turbine windfarm an associated infrastructure. The N site at Cronin would be occupied by 7 of the proposed turbines and a permanent met mast, and the S site at Skyvalley would be occupied by 13 of the proposed turbines.

The proposed windfarm development would comprise: -

- 20 x c.6MW wind turbines
    - 180m tip height
    - 162m rotor diameter
    - 99m hub height
- Total generating capacity of c.120MW.
- Associated foundations & hardstands.
- 1 x permanent meteorological mast (c.100m high).
- 1 x 110kV sub-station & associated infrastructure.
- Internal underground cabling.
- Underground grid connection along public roads to existing 110kV substation at Monkstown, Athlone (c.11km to E).
- Upgrade works at existing Monkstown substation (incl. new Bay).
- 3 x new site entrances off the R357 (N & S) & internal access tracks.
- 2 x temporary construction compounds.
- 7 x overburden spoil storage areas.
- Site drainage & sediment control works.
- Site development & ancillary works.

A 10-year planning permission and 30-year operational life span is being sought.

2.3 **Environmental Impact Assessment Report (EIAR)**

The EIAR described the site and surrounding area; stated that the proposal would comply with EU, national and local planning and energy policy; considered alternatives; and provided a detailed project description.

The main body of the EIAR described the receiving environment; outlined the study methodologies; assessed the potential impacts on the receiving environment under the usual range of headings; proposed mitigation measures for the construction, operational and decommissioning phases; identified residual impacts and interactions and assessed cumulative impacts; and had regard to climate change and the risk of major accidents and natural disasters.

The EIAR was informed by a visual impact analysis, several technical appendices and a Non-Technical Summary and Schedule of Mitigation Measures was provided.

The EIAR concluded that environmental impacts, which relate to residential and visual amenity, biodiversity, birds, hydrogeology, water quality and aquatic ecology, will be managed by mitigation measures; the proposed development would comply with climate change, renewable energy and planning policy; that it would not adversely affect amenities (residential, visual or heritage) or give rise to a traffic hazard; and that it would be in accordance with the proper planning and sustainable development of the area. The EIAR conclusions were not materially altered by the information contained in the applicant's response to the Observer Submissions or the Further Information response.

2.5 **Natura Impact Statement**

A Stage 1 AA screening exercise was carried out for the proposed development and a Stage 2 Natural Impact Statement was prepared.

2.5.1 Stage 1 AA Screening Report

The AA Screening exercise described the site location and the characteristics of the proposed development, and it identified the European sites within the Likely Zone of Influence of the project. It assessed the likely effects on several European sites within a 15km radius and concluded that the proposed windfarm and cable connection to the Monkstown substation could have likely significant effects on the Conservation Objectives of 9 x European Sites, and that progression to a Stage 2 Natura Impact Statement was considered necessary for those sites. The AA Screening conclusions were not materially altered by the information contained in the applicant's response to the Observer Submissions or the Further Information response.

2.5.2 The Natura Impact Statement Report

The NIS summarised the background to the report and described the AA methodology. It described the proposed development and the baseline ecology of the site, and it assessed the likely significant effects on 9 x European sites which were screened in after the Stage 1 AA exercise. It identified the potential for direct and indirect effects on these European sites and proposed a range of mitigation measures which are contained in the EIAR. It assessed the potential for cumulative effects in combination with other plans and projects. The NIS was informed by the Stage 1 AA Screening Report, several ecological surveys, a Construction & Environmental Management Plan and relevant EIAR Chapters. The NIS concluded that the proposed development, individually or in-combination with other plans or projects, will not adversely affect the integrity of any European Site. The NIS conclusions were not materially altered by the information contained in the applicant's response to the Observer Submissions or Further Information response.

3.0 LEGISLATIVE & POLICY CONTEXT

3.1 National Policy

National Planning Framework Plan, 2018-2040

This plan sets out a strategic national planning framework for the entire country. It recognises the need to move toward a low carbon and climate resilient society, and it emphasizes that rural areas have a strong role to play in securing a sustainable renewable energy supply. It seeks to harness the country's renewable energy potential, achieve a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050, and promote new energy systems & transmission grids (including on and offshore wind energy). In relation to roads, NSO 2 seeks to maintain the strategic capacity and safety of the national road network.

National Development Plan, 2021-2030

This plan underpins the NPF Plan, and it sets a framework for investment priorities which includes expenditure commitments to secure a wider range of Strategic Investment Priorities.

National Energy and Climate Plan, 2021-2030

This Plan outlines Irelands energy and climate policies in detail for the period from 2021 to 2030 and looks onwards to 2050. The NECP is a consolidated plan which brings together energy and climate planning into a single process for the first time. It envisages a target of at least 55% renewable energy in electricity by 2030.

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

Establishes a framework to develop the transition towards a low carbon economy.

Climate Action Plan, 2023

Seeks to tackle climate breakdown and it commits Ireland to a legally binding target of net-zero greenhouse gas emissions by 2050, an emissions reduction of 75% and to meet up to 80% of electricity demand form renewables by 2030.

Wind Energy Development Guidelines - Guidelines for PAs, June 2006.

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

Draft Wind Energy Development Guidelines, 2019

The Draft Guidelines propose several key amendments to the original document in relation to noise, visual amenity, shadow flicker and community engagement. The application of more stringent noise limits in line with WHO noise standards together with a more robust noise monitoring system and reporting system is proposed. The mandatory minimum 500m setback from houses is retained but augmented by a setback of 4 x turbine height from sensitive receptors.

National Biodiversity Action Plan, 2022

The Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans. It contains 119 x targeted actions which are underpinned by 7 x strategic objectives.

National Landscape Strategy for Ireland, 2015-2025

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

The Planning System and Flood Risk Management, 2009

These Guidelines seek to avoid inappropriate development in areas at risk of flooding and avoid new developments increasing flood risk elsewhere. They advocate a sequential approach to risk assessment and a justification test.

3.2 Regional Policy

Regional Economic & Spatial Strategy for the Northern & Western Region 2020

This document seeks to facilitate the sustainable development of additional electricity generation capacity throughout the region and to support the sustainable expansion of the transmission network. The Regional Authority seeks to ensure that future strategies and plans for the development of renewable energy, and associated infrastructure, will promote the development of renewable energy resources in a sustainable manner. Several RPOs deal with renewable energy.

3.3 Other policy documents

- EU Energy Directives and Roadmaps and associated national targets for renewable energy by sector.
- Strategy for Renewable Energy 2012-2020
- EU Guidance (2013) Wind Energy Developments and Natura 2000 Sites.
- Ireland's Transition to a Low Carbon Energy Future, DCENR, 2015-2030
- Renewable Energy Policy and Development Framework. DCENR, 2016

3.4 County Roscommon Development Plan 2022-2028

Chapter 8 deals with Climate Action, Energy and the Environment, and it is accompanied by a Renewable Energy Strategy, Climate Adaptation Strategy and a Landscape Character Assessment. Chapter 9 deals with Built Heritage and Chapter 10 deals with Natural Heritage. Appendix 6 deals with Climate Action, Adaptation & Mitigation. Table 1.1 sets out Strategic Aims and Table 8.1 deals with Renewable Energy Potential. Map 2.1 comprises the Core Strategy Map.

Strategic Aims:

SA1: seeks to achieve a transition to a competitive, greener, low carbon, climate resilient and environmentally sustainable county, facilitated through reducing the need to travel, by integrating land use and sustainable modes of transport, by reducing the use of non- renewable resources and by promoting and facilitating renewal energy initiatives on a domestic and commercial scale.

SA4: seeks to promote a high-quality living environment in urban & rural areas.

SA11: seeks to protect & enhance the natural assets of the County, including clean water, biodiversity, landscape, green infrastructure, heritage & agricultural land.

SA14: seeks to protect, conserve & enhance built & natural heritage & landscape.

Renewable energy:

CAEE 8.3: seeks to support developments & actions that assist in achieving national targets for renewable energy and reducing greenhouse gas emissions.

CAEE 8.4: seeks to encourage & facilitate the various forms of renewable energy development detailed in the Renewable Energy Strategy (RES).

CAEE 8.5: seeks to facilitate wind energy developments primarily in areas designated as "Most Favoured" & secondarily in "Less Favoured" areas in the RES.

CAEE 8.7: seeks to ensure that renewable energy developments are considered in the context of relevant EU & national legislation (incl. environmental protection).

CAEE 8.8: seeks to ensure that renewable energy developments do not undermine the preservation & conservation of the natural & built environment.

CAEE 8.9: seeks to work in collaboration with EirGrid and other service providers and statutory bodies to facilitate a modern electricity network within the county.

Renewable Energy Strategy

Designation	Areas Suitable for Wind Development
Most Favoured	Wind farm development will be considered favourably, subject to compliance with all necessary siting and design standards.

Landscape:

NH 10.25: seeks to minimise visual impacts on sensitive areas.

NH 10.26: seeks to protect important views & prospects in the rural landscape.

No.	Landscape Character Area	Landscape Character	Landscape Value
34	Lough Funshinagh, Stone Wall Grasslands & Esker ridges	Dry Farmland	Moderate Value
12	Athleague & Lower Suck Valley	River Corridor	High Value

Protected Views & Scenic Routes:

Several in the wider area including:

- ***Scenic Route No. 8*****:** View from Lisfelim to NE (L2017).
- ***Scenic View No. 22***: View from Lough Funshinagh at Lisfelim to NE.

Heritage:

BH 9.13: seeks to secure the preservation of artefacts (in situ or by record).

NH 10.1: seeks to ensure the protection, conservation & enhancement of biodiversity

NH 10.7/8/9/10: seeks to protect European sites & NHAs.

NH 10.11: seeks to preserve & protect sites of county geological importance.

NH 10.12: seeks to promote & facilitate the development of geo-tourism.

3.5 Adjoining Countries

The Development Plans for the adjoining of Longford and Offaly contain a similar range of policies and objectives.

Protected Views & Scenic Routes:

Several in the wider area from within Counties Longford and Offaly.

- ***Protected View (V4)***: from Co. Offaly, Clonmacnoise to SE (R444 in the townlands of Clonmacnoise, Creevagh)
- ***Scenic Routes***: from Co. Longford (Lough Ree) to the NE.

3.6 Heritage Designations

European sites	NHAs & pNHAs	Geological sites (National Importance)
Lough Croan SAC & SPA	River Suck Callows NHA	Killeglan Karst Landscape
Four Roads Turlough SAC & SPA	Aughrim Bog NHA	Castlesampson Esker
Lough Funshinagh SAC	Kilmore Bog NHA	
Lisduff Turlough SAC	Ballygar Bog NHA	
Ballinturly Turlough SAC	Castle Ffrench East Bog NHA	
River Suck Callows SPA	Annaghbed Bog NHA	
Aughrim Bog SAC	Crit Island West NHA	
Ballygar (Aghrane) Bog SAC	Killure Bog NHA	
Killeglan Grassland SAC	Lough Croan pNHA	
Castlesampson Esker SAC	Carrickynaghtan Bog NHA	
Ballynamona Bog/Corkip Lough SAC	Four Roads Turlough pNHA	
Middle Shannon Callows SPA	Lough Funshinagh pNHA	
River Shannon Callows SAC	Lisduff Turlough pNHA	
Mongan Bog SPA	Feacle Turlough pNHA	
Lough Ree SAC & SPA	Ballinturly Turlough pNHA	
	Ballinasloe Esker pNHA	
	Castlesampson Esker pNHA	
	River Shannon Callows pNHA	
	Lough Ree pNHA	

4.0 SUBMISSIONS

4.1 Roscommon County Council

4.1.1 Chief Executive's Report

- Note contents & conclusions of the EIAR & NIS (incl. mitigation).
- Note compliance with national, regional & local planning policy.
- Recommend that proposed development be endorsed in principle.
- ***Roads Section*** requirements are set out below (Conditions).
- ***Environment Dept***. noted the following: -
    - Located in an area of high vulnerability which poses a risk of contamination of Regionally Important Aquifer.
    - Control measures around construction should reflect soil depths.
    - Close to ZoC for Killeglan Springs (Public Water Supply) which may extend beyond current defined area due to karst geology.
    - Carry out GC water crossings in consultation with IFI & Council.
    - Some works (incl. cut & fill) may require Waste Permits.
    - Low interconnectivity between Turloughs does not reflect past bird surveys, need to consider turlough & other water bodies as one large shared unit, due to the high mobility of species.
    - Potential for site to hold other species of value (incl. butterflies).
    - Dust monitoring programme required.
    - Control/monitor noise impacts on houses and avoid blasting.
    - Comply with current noise control measures during operation.
- Request attachment of ***conditions*** related to: -
    - Maximum tip height.
    - Locate GC cabling in roadside verge (c.1.3m from road edge).
    - Submit detailed maps of GC cable route.
    - Appoint a dedicated liaison engineer for all stages of the project.
    - Submit a CEMP & construction detail of underground cabling.
    - Submit details for road reinstatement works (incl. landscaping)
    - Submit a TMP for all stages.
    - Carry out a pre-condition survey of all delivery routes.

    - Submit design & construction details for temporary traffic modifications at node points.
    - Submit an Emergency Plan.
- Submit a dust monitoring programme (with mitigation measures).
- Submit a Construction & Environmental Monitoring Plan.
- Undertake bedrock excavation by use of rock breakers fitted with noise abatement equipment & limitations on rock blasting.
- Submit a comprehensive decommissioning plan.
- Development & Annual maintenance Contributions and Bond.

4.1.2 Elected Members Recommendations

- Households within 3km of a turbine should receive free electricity.
- Independent agency to oversee turbine issues.
- Maximum height of 120m & increase Community benefit fund to E500,000 for local community projects.
- Relocation compensation for residents within 10 x turbine height.
- Residential setback should be 1.5km.

4.2 Prescribed Bodies

A total of 3 x submissions received from the following Prescribed Bodies.

- Development Applications Unit (NPWS)
- Geological Survey Ireland
- Transport infrastructure Ireland

4.2.1 Dept. of Culture, Heritage & the Gaeltacht (DAU-NPWS)

- Note contents & conclusions of EIAR & NIS (incl. extensive surveys).
- Project located within Zone of Influence of 18 x designated sites.

Karst landscapes:

- Located on the only high ground karst landscape of wetlands.
- Several wetland SPA sites within 2km are designated for GWFG & Whooper swan and Annex 1 Turloughs, but some are missing from

Constrains Map (incl. Lough Croan & River Suck Callows) which is at an inappropriate scale to describe the extent of the wetland sites.

- Insufficient assessment of interconnected landscape features (topography, habitats & ground water) & potential impacts on bird movements between designated and non-designated wetland areas.
- Turbines are located close to several European sites, and within 1km of Lough Croan Turlough SAC & SPA, which is used by feeding & roosting GWFG who fly across the site to River Suck Callows SPA.
- Karst landscapes are biologically diverse ecosystems, important to Bats where there are caves present, which are often overlooked.
- S cluster is recognized as an area of national importance because of the extent of valuable & species-rich semi-natural grassland habitats, which supports a range of plants & animals which are uncommon.

Annex 1 grassland habitats:

- There are large areas of rough/rocky grassland which are likely to conform to Annex-listed habitat species-rich calcareous grassland.
- This is rare, special & in decline across Ireland & Europe, the recorded conservation status is “Bad”, and it is thus a top conservation priority.
- Loss of c.2.7ha of Annex 1 calcareous grassland habitat (incl. important orchid sites) requires detailed assessment of impacts.

Wetland birds:

- Whooper swans & other SCI species also feed & fly through the site.
- Aware of the availability of additional bird survey data.
- The national importance of Lough Ree should be recognized, it is also internationally important for breeding gulls & waders, and it contains some breeding Curlew nest sites & species-rich semi-natural habitats.
- Lough Ree SPA is within 15km of the site, and it is ranked as the top hotspot of breeding bird sites in Ireland.
- Insufficient consideration of species in ex-situ locations that are intrinsically linked to and support QI & SCI species.

- Inadequate references to National Biodiversity Action Plan (incl. connectivity between designated sites & no net loss of biodiversity).
- Irish populations of breeding waterbirds are in significant decline.

QI/SCI bird species:

- ***GWFG***
    - Uses the nearby Lough Croan SPA (c.1km) as an overnight roost and their known foraging range is c.8km of roosting sites.
    - High collision risk species, although the risk was recorded as low, records may have been biased by nearby farming activity.
- ***Whooper swan:***
    - County hosts internationally important numbers of WS which were recorded feeding/flying close to turbines & between SPAs.
    - River Shannon tributaries support very high numbers, with the River Shannon & River Suck Callows on the top 4 Irish sites.
    - Undesignated sites (grassland feeding & wetland roosts) are associated with designated sites, and WS movements between Turloughs and the River Suck Callows have been recorded.
    - The collision risk is likely to be higher than predicted as the assessment did not take account of future land use changes.
- ***Breeding Waders/Curlew:***
    - Population declines are significant amongst ground-nesting birds including breeding waders (Lapwing, Redshank & Curlew).
    - Wintering Curlew were recorded in all 3 x winter surveys with a Collision Risk prediction of 1 per 10 months (winter flights).
    - Small numbers recorded flying over the site during 2 x breeding seasons around Lough Feacle Turlough (S cluster).
    - Nests recorded to E & Lough Ree is a breeding stronghold.
    - Insufficient attention paid to potential impacts on this breeding wader and other similar species.
- ***Golden plover:***
    - Note that nocturnal bird surveys were abandoned due to the small number recorded during the day, and survey difficulties.

- ***Black headed Gull***:
    - QI for Middle Shannon Callows & breeds at Lough Ree SPA.
    - The recorded numbers (c.100) fall well short of NPWS surveys which recorded an internationally important breeding population.
    - Lough Ree is c.15km from the project site & the maximum foraging range is 18.5km during the breeding season.
    - Inadequate consideration of breeding season.

Non - QI/SCI bird species:

- ***Yellowhammer:***
    - Non-QI but declining Red List species.
    - Good potential scrub habitat to the S of site in the karstified hills.
    - Species could be impacted by scrub & hedgerow removal.
    - Inadequate consideration of this rare passerine species.
- ***Raptors:***
    - Peregrine, Buzzard, Kestrel & Sparrow Hawks recorded close to several turbine locations.

Impacts on Bats:

- No adverse bat impacts predicted in EIAR.
- Bats are increasingly impacted by windfarms (collisions & barotrauma) & karst landscapes are often important to bats.
- No caves recorded in desk top studies, but presence of several dolines, caverns & karst features were noted by NPWS staff, & further investigation of karst features required.
- Inadequate seasonal bat surveys undertaken during various weather conditions, particularly for migrating bats (incl. Nathusius' pipistrelle).
- Further assessment required for migrating, high-flying & far-flying species (incl. Leisler's bat).

Impacts on Grassland habitats:

- Killeglan Grassland SAC is c. 570m SW of the site, and the Annex 1 Semi-natural dry calcareous grasslands (incl. orchid sites) is the QI habitat for this SAC.
- Two of the turbines are located on Annex 1 Calcareous grassland & seven are located at the edge of this habitat, and the works will involve the loss of c.2.7ha outside of the SAC.
- The Biodiversity Management & Enhancement Plan provides for the offset of this grassland habitat, but it would not be a like-for-like replacement, as Annex 1 status would take time to establish.
- Several year net loss of habitat type which may take decades to become equally valuable to the lost Annex 1 habitat.
- This should be reflected in the AA of conservation objectives & site integrity (Incl. connectivity & seed banks).

Impacts on karst features:

- ***Dolines:*** note absence of several features on EIAR maps.
- ***Turloughs:*** N turbines overlap with the Cortaphuill & Commons Turlough, and the EIAR maps do not show the full extent of the undesignated turloughs which are Priority 1 habitats.

Miscellaneous:

- ***Marsh fritillary***: significant populations recorded in project footprint in species rich grassland containing Devil's bit scabious (larval food plant), the loss of habitat & interconnections could contribute to localized extinctions of this rare species.
- ***Hedgerow loss***: inadequate explanation of replacement habitat which directs Bats towards turbines (T1/ 5/19/20), connectivity will take a long time to re-establish & translocation preferred.
- ***Invasive species***: prevent introduction & monitor spread.

4.2.2 Geological Service Ireland

Geo-heritage:

- Several County Geological Sites (CGSs) in vicinity of site & some are of national importance and proposed for NHA designation, including: -
    - *Killeglan Karst Landscape,* which is the only area of lowland, boulder-strewn, limestone glacial karst in the country.
    - *Castlesampson Esker*, is an excellent example of a complex, multi-crested esker which is comprised of numerous beads.
- A total of 4 turbines located within Killeglan CGS.
- Several access tracks located within Killeglan & Castlesampson Esker.
- Around 3.9ha of the unique Killeglan Karst Landscape will be lost.
- Policy NH 10.11 seeks to preserve & protect CGSs which comprise designated or NHA sites.
- Potential impacts include: -
    - Removal & damage of limestone boulders.
    - Destruction of individual, distinctive, boulder strewn ribbed moraines with resultant loss of landscape definition.
    - Damage to underlying karst bedrock & features (incl. swallow holes, dolines & turloughs) & potential collapse of sinkholes.
    - Damage to intact esker & associated features (fans & deltas).
    - High overall loss of landscape integrity & fragmentation.
    - Loss of educational site & public amenity for geo-tourism.
- Geological Heritage Audit notes the need for scientific investigation.
- Ideally the site should not be damaged, or integrity impacted or reduced in any manner due to any of the construction works.
- Appropriate Geological Survey required if integrity cannot be preserved, undertaken in consultation with GSI.

- Following mitigation measures suggested: -
    - Situate turbines outside CGS boundaries, or close to perimeter.
    - Access tracks should avoid the Esker in all instances.
    - Wider haul routes should not cross the CGSs.

- Smaller service roads should be kept to a minimum width.
- The 5m wide width of the internal roads should be reduced as they significantly exceed the width of the unpaved farm tracks.

Groundwater:

- Site underlain by a “Regionally Important Aquifer – karstified (conduit)”
- Groundwater Vulnerability Map indicated variable vulnerabilities.
- Use Groundwater Viewer to identify areas of High to Extreme Vulnerability and Rocks at or Near the Surface.
- Groundwater drinking abstraction area / Zone of Contribution for the Killeglan Public Water Supply – Tobermore Spring in the vicinity.
- Excavations should ensure that groundwater flow within the ZoC to the groundwater abstraction points is not disrupted.
- Possible presence of other unmapped groundwater abstractions.
- Robust assessment of potential impacts on public & private water supplies (incl. contamination & dewatering) required.
- Refer to the Roscommon Groundwater Protection response overview.

Other:

- Refer to GSI datasets – Geo-mapping, Geo-hazards & Resources.

4.2.3 Transport Infrastructure Ireland

- Note that access is via a regional road.
- All works along the national road network should comply with TII requirements, be subject to Road Safety Audits, agreed proposals should be referred to TII & mitigation measures attached as conditions.
- No reference to condition surveys of national roads or abnormal weight loads & local authority road permits may be required.
- All structures along haul routes should be checked to confirm capacity to accommodate abnormal loads.
- S.53 consent under the Roads Act does not apply to HDD crossing of N6 at J13 as it is not a Motorway, and an alternative consent applies.

4.3 Public submissions

A total of 11 x submissions were received from members of the public:

- Wind Turbine Action Group South Roscommon
- Skeavalley Wind Turbine Action Group
- Mairead Farrell & Christopher Walsh
- Celia & Tony Concannon
- Lorraine Garvey
- Aoife E Butler
- Gerard Lennon
- Ciara Farrell
- Linda Kildea
- Eugene Forde
- Mary Moore

The main points of concern relate to: -

- Non-compliance with EU & national requirements, environmental law & policy guidance (SEA, EIA, AA, WFD, CAP & Biodiversity).
- Inadequate assessment of suitable sites for windfarms in RCC's RES, and 4 x turbines are located in a "Not Favoured" area.
- Previously refused windfarms following 2 x JRs.
- This is a larger scale of development (incl. turbine height) & insufficient development details (incl. scale of concrete use).
- Inadequate EIAR (incl. survey data, cumulative impacts, mitigation & alternatives), inaccuracies & omissions (incl. turloughs [Skeavalley Turlough] & birds).
- Adverse impact on karst geology, hydrogeology and hydrology.
- Adverse impact on European sites, Annex 1 & Priority habitats.

- Adverse impacts on biodiversity, habitats (incl. grasslands, wetlands & watercourses), karst features (incl. caves, dolines & caverns), species (incl. birds, bats, butterflies & orchids); and inter- connectivity between habitats & species.
- Adverse impacts on rural visual amenity (incl. unique karst landscapes [Killeglan Karst Landscape]), and loss of hedgerows & stone walls.
- Adverse impact on residential amenity (noise, visual, shadow flicker, health & safety, and human health) and property devaluation.
- High groundwater vulnerability, adverse impacts on ground & surface water quality, recharge & supply, public water sources (incl. Killeglan Groundwater Source Protection Zone) & private wells, and construction phase water pollution & operational phase drainage.
- Disturbance to ground water flows & hydraulic connectivity, surface level flood risk in vicinity of turbines located proximate to seasonal turloughs, exacerbate flooding at Lough Funshinagh (and other turloughs), and lack of consideration of recent flood events.
- Adverse impacts on cultural heritage, tourism, recreation & amenity.
- Traffic generation, abnormally large loads, road safety & disturbance.
- Excessive infrastructural works in rural area (incl. concrete) and inappropriate generic foundation design in weathered karst bedrock.
- Interruptions & interference with telecommunications services.
- General disturbance during construction.
- Inadequate consideration of climate change.
- Insufficient consideration of decommissioning phase.
- Lack of meaningful community engagement.
- Contrary to proper planning and sustainable development of the area.

All observations were circulated to the applicant for observation and comment.

4.4 Applicant's response to Submissions

4.4.1 Roscommon County Council

The applicant's response to the main concerns raised by the Chief Executive of Roscommon County Council contained: - clarifications; confirmation that the relevant agencies would be consulted, appropriate standards applied in relation to specific works, and best practice adhered to via the final CEMP; along with additional site survey work in relation to groundwater vulnerability; and further bird surveys and analysis. The response and additional surveys did not give rise to any material changes to the proposed development. The suggested conditions were considered acceptable, except for the E2,000/km road maintenance contribution which is not provided for in the Development Contribution Scheme.

The applicant's response to the main concerns raised by Elected Members of Roscommon County Council clarified that: - electricity would be fed directly to the national grid and that the Community Benefit Fund would prioritise residents within 1km; the Community Liaison Officer would remain available over the course of the development; the application is for 180m high turbines in line with market conditions, and a reduction to 120m would not achieve optimum energy outcomes; mitigation measures will ensure no loss of residential amenity and avert the need for relocation compensation; and all turbines are located outside the required setbacks.

The EIAR and NIS conclusions were not materially altered by the information contained in the response to the Chief Executive or the Elected Members of RCC.

4.4.2 NPWS

The applicant's response to the main concerns raised by the NPWS contained additional bird survey data and analysis (4th year of non-breeding winter survey). This gave rise to some minor changes to the Collision Risk Analysis for some species (incl. non-SCI non-breeding Curlew & Black-headed gull [increased mortality predicted]), but no change to the conclusion that the project would not give rise to any significant displacement or barrier effects. Additional nocturnal winter surveys for

Golden Plover and Lapwing indicated a small and occasional presence at the site. Additional bird survey data held by NPWS was requested (see FI request below). Confirm no loss of QI grassland habitat for the ***Killeglan Grasslands SAC***, restoration measures for the non-QI grassland habitat will give rise to a net gain, and the rare Green-winged Orchid or any Flora Protection species were not recorded on the site. ***Mapped Turloughs*** (to a larger scale) near the proposed development (Fig.9-13A) confirm that no turbines are located within these areas. In relation to ***GWFG & WS***, additional bird survey data and analysis (4th year of non-breeding winter survey) confirm no significant risk of disturbance or collision (which remains low). No significant impacts on breeding and non-breeding ***Waders*** predicted (incl. Curlew & Lapwing). ***Passerines*** (incl. Yellowhammer) were scoped out of the EIAR in line with NS Guidance. Confirm no net loss of ***Hedgerow*** which will be replaced. Confirm that potential risks to ***Raptors*** (incl. Peregrine & Kestrel) were addressed and low Collision risk predicted, whilst Buzzard & Sparrowhawk are common & widespread. Confirm that the site was fully surveyed and appraised for suitable ***Bat*** habitat (incl. cave & caverns) and hedgerow replanting will ensure connectivity. HES has mapped and examined all ***geological and karst features*** (incl. dolines & turloughs) within the site and no further research is required. Confirm that following extensive ***Marsh Fritillary***, habitat assessments & larval web surveys, no evidence of its presence was recorded. Confirm that no ***Invasive Species*** were recorded and that an IV Management Plan has been prepared. Confirm that all ***protected surveys*** were carried out at appropriate times and within optimum conditions.

The response submission and additional survey information and analysis did not give rise to any material changes to the proposed development, and the EIAR and NIS conclusions were not materially altered.

4.4.3 GSI

The applicant's response to the main concerns raised by the GSI confirmed that: - all available GSI datasets were utilised; HES has extensive experience and expertise in wind farm drainage, hydrogeology and wetlands eco-hydrology; karst landscape features were carefully considered in the design stage and layout; 4 of the turbines would be located within or partially within the Killeglan Karst Landscape geo-heritage

site, and some of the access tracks would cross the Castlesampson Esker, however the layout reflects both the characteristics and agricultural use of the site (incl. farm tracks); and the groundwater issues are covered in the EIAR. The response submission did not give rise to any material changes to the development, and the EIAR and NIS conclusions were not materially altered.

4.4.4 TII

The applicant's response to the main concerns raised by TII confirmed that: - the relevant agencies would be consulted; appropriate standards applied in relation to specific works (incl. Road Safety Audits); best practice adhered to via the final CEMP (incl. TMPs); there would be no "abnormal weight loads"; and that a Transport Route Structural Survey could be required by condition. The EIAR and NIS conclusions were not materially altered by the applicant's response to the TII submission.

4.4.5 Members of the Public

The applicant's response to the main concerns raised by members of the public confirmed that: - the entire site is located within a "Most Favoured" area for windfarm development; the karst landscape has been heavily modified by agricultural activities and that the windfarm was designed to avoid impacts on karst features; the rational for excluding SPAs beyond 15km radius (mainly related to foraging range); several bird species were not present in significant numbers during surveys (incl. Hen harrier & White-tailed sea eagle); there would be no significant loss of plant species or trees, or adverse impacts on nocturnal mammals (incl. Badgers); or additional flood risks or water quality impacts near to the turloughs or turbines (incl. at Dysart & T4).

Refer to response to NPWS and GSI concerns above in relation to birds, biodiversity, hydrology, karstified landscapes & groundwater (paras. 4.4.2 & 3). Applicant also confirmed that: - there would be no significant long term adverse impacts on amenity, noise, public health, traffic, telecommunications, property values or cultural heritage; and that Community Engagement took place via a dedicated

Community Liaison Officer (challenging during Covid pandemic); and that the development complies with planning policy.

The submitted drawings are bespoke for the project and the site. However, a drafting error was noted in some of the drawings in relation to the turbine foundation diameter and this has been amended from 15m to 29m (amended drawings attached). The original EIAR impact assessments were mainly undertaken for the 29m diameter and the applicant's assessment of any additional potential adverse environmental impacts, are summarised below.

- ***Ch.6 Ecology***: Increase loss of Annex 1 Dry Calcareous grassland (0.35ha) resulting in total loss of 3.05ha. No change to EIAR conclusions, as the BMEP provides for 9-12 ha of replacement habitat.
- ***Ch. 9 Water***: Drainage details amended. No change to EIAR conclusions.
- ***Ch. 13 Archaeology***: 2 x Recorded Monuments (Field systems). No perceptible impacts. No change to EIAR conclusions.

The information submitted did not give rise to any material changes to the proposed development and the EIAR and NIS conclusions were also not materially altered by the response submission.

4.5 Further Information request and response

The Applicant's response to the Observer's Submissions referred to the submission received by the Board from the Department of Housing, Local Government and Heritage, Development Application Unit (DAU). This submission referenced the availability of additional data in relation to Greenland white-fronted goose, Whooper swan and Black-headed gull, which may assist the Board with its assessment. The applicant was requested to liaise with the DAU, by way of an FI request, in relation to acquiring copies of the additional survey data held by it in relation to the bird species.

This information was provided, and it indicated higher numbers of species at several locations than recorded in the applicant's surveys. However, the response along with the applicant's interpretation and analysis of the additional bird survey results did not give rise to any material changes to the development. The EIAR and NIS conclusions were not materially altered by the information contained in the applicant's response to the Further Information request.

4.6 Further correspondence

Having regard to the significance of the applicant's submission of new survey information and resultant analysis (incl. Collision Risk), the applicant was requested to readvertise the project and make the information available for public inspection.

The following 6 x response submissions were received from Prescribed Bodies and Observer, including two from new Observers.

- Transport Infrastructure Ireland (TII)
- Wind Action Group South Roscommon
- Ciara Farrell Esq.
- Aoife E Butler
- Claire & Damian Cooney (*new observer*)
- Brendan McMahon (*new observer*)

TII: welcomes clarifications and commitment to addressing TII concerns, which should be attached as conditions.

Wind Action Group South Roscommon: notes the discrepancy between the EIAR and DAU bird survey data (GWFG, WS & BHG); it queries the reliability of the data in predicting future impacts given the c.30-year lifespan of the project; this concern is further exacerbated by climate change including local rainfall level increases and resultant impacts on recorded water levels in the River Suck; OPW recorded real time water levels at Derrycahill Bridge on the River Suck as coming within c.1.19m to the highest level recorded (21/11/09); and climate change impacts on feeding & roosting over the next 40 years are impossible to predict.

Ciara Farrell Esq.: notes the discrepancy between the EIAR and DAU bird survey data at the surrounding waterbodies (incl. Lough Croan); she questions the quality of the revised assessments (incl. Collision risk) which are considered to be inadequate & deficient; queries the resultant conclusions of no additional adverse impacts on birds, which are considered to be illogical, irrational & based on statistical probabilities; and submits that the integrity of European sites could be adversely impacted as all reasonable scientific doubt has not been removed. Note the lack of regard for declining Golden plover populations, which renders it as of more national importance & significance that during the previous applications; inadequate EIAR nighttime survey data because of health & safety concerns is unacceptable; and maintaining favourable conservation status for SCI species cannot be assured based on the data provided. Local anecdotal evidence of Hen harrier activity in the area indicates the presence of breeding pair and a possible nest that has not been adequately examined; and windfarms are known to have adverse impacts on breeding HH when the project elements are located close to nesting sites.

Aoife E Butler: notes the discrepancy between the EIAR and DAU bird survey data and lack of explanation for it; queries the revised Collision Risk results and resultant conclusion of no additional significant adverse impacts on birds & the integrity of European sites, and that all reasonable scientific doubt has been removed; and no rational for surveying within 1km of the turbines as opposed to 10km which as limited the impact assessment on species and their habitats (incl. collision, mortality, barrier effect, displacement & habitat loss).

Claire & Damian Cooney: requested that a sound decibel test be carried out to determine sound level and frequency to assess impacts on their home and livestock.

Brendan McMahon: the access road & cable route near Fairhill pass through his lands, close to his house and stone wall enclosure, with adverse impacts on the stability of boundary walls and trees, and increased EI, noise & dust levels expected.

5.0 ORAL HEARING

The Board decided that there was sufficient written evidence on the file to enable an assessment of issues raised and that an Oral Hearing should not be held, at a meeting held on 24th January 2023.

6.0 PLANNING ASSESSMENT

The main planning issues arising in this case are:

1. Climate change & energy policy
2. National & regional planning policy
3. Local planning policy
4. Carbon balance
5. Other issues

- Section 7.0 of this report deals with Environmental Impact Assessment.
- Section 8.0 of this report deals with Appropriate Assessment.

6.1 Climate change and energy policy

The proposed windfarm would be compatible with European and National climate change and renewable energy policies and legislation (incl. the Climate Action and Low Carbon Development (Amendment) Act, 2021) as summarised in section 3.0 above. It would contribute to the achievement of European and National renewable energy targets, and in particular the objectives of the Climate Action Plan which seeks to tackle climate breakdown and it commits Ireland to a legally binding target of net-zero greenhouse gas emissions by 2050, an emissions reduction of 75% and to meet up to 80% of electricity demand form renewables by 2030. This Plan also identifies a range of measures to deliver targets for a reduction in greenhouse gas emissions including the better management of peatlands. Compliance with the various measures will be addressed in more detail in section 6.3 below in relation to carbon balance, whist other practical issues related to environmental management (incl. soils, hydrology, hydrogeology & biodiversity) will be addressed in the relevant sections of the Environmental Impact Assessment chapter of this report.

6.2 National and regional planning policy

The proposed windfarm would be compatible with national planning policy as set out in the National Planning Framework Plan, 2018-2040 which recognises the need to move toward a low carbon and climate resilient society with a sustainable renewable energy supply. The 2006 Wind Energy Development Guidelines (and 2019 Draft

amendments) advise that a reasonable balance must be achieved between meeting national policy on renewable energy and the proper planning and sustainable development of an area. The Guidelines also state that projects should not adversely affect any European sites, have an adverse impact on birds, give rise to peat instability or adversely affect drainage patterns, cultural heritage, sensitive landscapes, the local road network or residential amenity. These practical issues will be addressed in more detail in the relevant sections of the Environmental Impact Assessment and Appropriate Assessment chapters of this report.

The proposed windfarm would be compatible with regional planning policy as set out in the current Regional Spatial and Economic Strategy for the Northern and Western Region which seeks to facilitate the sustainable development of additional electricity generation capacity throughout the region and to support the sustainable expansion of the transmission network.

6.3 Local planning policy

The proposed windfarm would be compatible with the general climate change and renewable energy aspirations contained in the current Development Plan, which seek to promote sustainable development and measures to reduce energy demand and greenhouse gas emissions and adapt to climate change. It also contains policies and objectives which seek to protect the environment, European sites, biodiversity, scenic landscapes, views, residential amenity, cultural heritage and the road network. These issues will be addressed in the following sections of this report.

In relation to specific local planning policies pertaining to renewable energy, the Plan and supporting Renewable Energy Strategy (RES) seek to support, encourage and facilitate various forms of development in line with EU and national policy (CAEE 8.3, 8.4 & 8.7). Several policies seek facilitate such development in designated areas (CAEE 8.5), protect the environment (CAEE 8.8) and work with relevant stakeholders (CAEE 8.9).

In terms of suitable locations for wind development, Policy CAEE 8.5 seeks to facilitate wind energy developments primarily in areas designated as “Most Favoured” and secondarily in “Less Favoured” areas in the Renewable Energy Strategy. The windfarm site is located within a “Most Favoured” area where “Wind farm development will be considered favourably, subject to compliance with all necessary siting and design standards”. I note the concerns raised by some of the Observers in relation to the designation of sections of the Southern Cluster as “Not Favoured” in the RES where “Windfarm development will not be considered favourable”, however I also note that this map was initially included in error and corrected in the current edition of the Development Plan and RES (Map 7).

I am satisfied that the proposed windfarm would be compatible in principle with the Development Plan and RES “Most Favoured” designation subject to compliance with all necessary siting and design standards, and these issues will be addressed in more detail in the relevant Environmental Impact Assessment and Appropriate Assessment sections of this report.

The Development Plans for neighbouring counties (incl. Galway, Longford & Offaly) also contain policies and objectives which seek to provide for renewable energy and to protect the environment, scenic landscapes, views and the road network. These issues will be addressed in the relevant EIA sections of this report.

6.4 Carbon balance

The Climate Action Plan seeks to tackle climate breakdown and it commits Ireland to a legally binding target of net-zero greenhouse gas emissions by 2050, an emissions reduction of 75% and to meet up to 80% of electricity demand form renewables by 2030. The proposed windfarm development would generate renewable energy which would in turn result in reduced CO_2 emissions to the atmosphere over the lifespan of the project. However, a balance needs to be struck between the carbon emitting construction activities (incl. turbine & concrete production and transport), the loss of any carbon storage capacity in excavated soils, and the generation of renewable energy from non-carbon emitting sources.

The proposed windfarm would be mainly located within a rural area which is underlaid by limestone bedrock with a glacial subsoil overburden, and the area is not

characterised by peaty soils. The proposed development of 20 x turbines would contribute c.120MW to the national grid per year and c.3,600MW over 30-years. The EIAR estimated the total carbon losses /offset associated with the proposed windfarm as c. 4,819,016 tonnes. This takes account of several variables including turbine manufacture, concrete production, and associated transportation and installation. This carbon savings would comprise a substantial amount over 30 years with a “pay-back” time of just under 2 years. I consider the carbon balance results to be reliable, and I am satisfied that there would be ample carbon savings over the projects 30-year lifespan when balanced against the construction related carbon emissions, in line with national policy and guidelines.

6.5 Other issues

Residential amenity: The proposed development would not overlook, overshadow, or result in a loss of privacy to any nearby houses, and there would be no significant loss of residential amenity. There would be some disturbance during the construction and decommissioning phases in relation to the works and traffic movements, and there is potential for disturbance during the operational phase in relation to noise, shadow flicker and visual intrusion. Refer to EIA section 7.0 for a more detailed assessment of potential impacts on population and human health, the landscape, traffic, and air and climate.

Visual amenity: Having regard to the scale and location of the proposed windfarm within a slightly elevated and moderately undulating rural area and the height of the turbines, the project has the potential to impact the visual amenities of the area in relation to landscape character, protected views and scenic routes. Refer to EIA section 7.4 for a more detailed assessment of potential impacts on the landscape.

Movement and access: The proposed development has the potential to impact on the national, regional and local road network during the construction and decommissioning phases mainly in relation to the delivery and removal of windfarm components, the delivery of construction materials and staff vehicles. Refer to EIA section 7.5 for a detailed assessment of potential impacts on the road network.

Environment & ecology: The proposed development has the potential to affect the environment, ecology, biodiversity and European Sites. Refer to Section 7.0 (EIA) for a more detailed assessment of potential impacts on the environment, and Section 8.0 (AA) for an appropriate assessment of likely significant effects on European sites within the Zone of Influence of the project.

Flood risk: The proposed development has the potential to affect hydrology and hydrogeology, along with ground and surface water flow patterns in the surrounding area during the construction, operational and decommissioning phases. Refer to EIA section 7.8 for a more detailed assessment of potential impacts on ground and surface water regimes.

Environmental services: The sanitary arrangements are considered acceptable.

Grid connection: The applicant has submitted sufficient information with the planning application, EIAR and NIS to enable the Board to undertake a cumulative impact assessment of any impacts on the environment, and likely significant effects on European sites, of the overall windfarm development in-combination with the grid connection, other windfarms, and plans or projects in the vicinity.

Community benefit: The management of any fund should be agreed with the PA.

Competency: I am satisfied that the EIAR surveys and data analysis have been undertaken by suitably qualified experts in their relevant fields.

Suggested conditions: Have been addressed in the relevant sections of the report.

Financial contributions and bonds: The standard conditions should be attached. The Council requested a further additional financial contribution of E2,000/km for road maintenance, however I note that this requirement is not provided for in the Council's adopted Contribution Scheme, and I am therefore satisfied that the suggested condition should not be attached.

7.0 ENVIRONMENTAL IMPACT ASSESSMENT

7.1 Introduction

This section of the report deals with the potential environmental impacts of the proposed development during the construction, operational and decommissioning phases. An EIA is required for proposed wind energy developments comprising more than 5 wind turbines or having a total output greater than 5MW or more (EIA Directive, Annex 2 & Schedule 5 Part 2 of the P&D Regs). The proposed 20 x turbine development would have stated output of 120MW and submission of an EIAR is therefore a mandatory requirement.

This section should be read in conjunction with Section 6.0 (Planning Assessment) and Section 8.0 (Appropriate Assessment).

7.2 Compliance legislative requirements

Directive 2011/92/EU was amended by Directive 2014/52/EU. The applicant has submitted an Environmental Impact Assessment Report (EIAR) which is presented in a 'grouped format' comprising the following:

- Non-Technical Summary
- Main Statement
- Photomontages
- Technical Appendices

I am satisfied that the information contained in the EIAR complies with article 94 of the Planning and Development Regulations 2000, as amended, and the provisions of Article 5 of the EIA Directive 2014.

I have carried out an examination of the information presented by the applicant, including the EIAR, and the submissions made during the course of the application. A summary of the planning authority's considerations, the submissions made by prescribed bodies and the observers have been set out in Sections 4.0 of this report.

The EIAR describes the proposed development, including information on the site and the project size and design. A description of the main alternatives studied by the developer and alternative windfarm layouts and grid connection routes considered, is provided and the reasons for the preferred choice. The impact of the proposed development was assessed under all the relevant headings with respect to:- population and human health; noise, shadow flicker, air and climate; biodiversity; landscape; land, geology and soils; hydrology and hydrogeology; roads and traffic; material assets and cultural heritage; and interactions of impacts. Mitigation measures are set in each chapter. The content and scope of the EIAR is considered to be acceptable and in compliance with Planning Regulations.

The EIA identifies and summarises the likely significant effects of the proposed development on the environment with respect to a number of factors. It identifies the main mitigation measures and residual impacts following mitigation, it assesses cumulative impacts, and it reaches a conclusion with respect to each of the factors. The EIA also considers the risks associated with major accidents and/or disasters. No likely significant adverse impacts were identified in the EIAR following mitigation.

With regard to the requirements of Article 111 of the regulations, I consider that the submissions are generally in accordance with the requirements of Article 94 of the Planning and Development Regulations 2001, as amended. Cumulative impacts with other plans and projects in the area are not considered likely to be significant.

7.3 Consideration of Reasonable Alternatives

Chapter 3 of the EIAR dealt with the consideration of alternatives. These included the “Do-nothing” Scenario. The main windfarm alternatives considered related to location, site layout and design, and alternative turbine designs, and the main grid connection route option alternatives related to alternative routes to Monkstown 110kV substation, all of which were assessed against key environmental and planning considerations related to the wind resource, grid proximity, planning policy, environmental considerations (incl. landscape, views, site stability, water quality, ecology, birds & heritage), road access, and distance from settlements and dwelling houses. The EIAR concluded that proposed development would represent the best option having regard to the aforementioned considerations.

7.4 Landscape (Visual Impact)

7.4.1 Project description

The proposed development would be located within a slightly elevated and moderately undulating rural area which is mainly characterised by agricultural land. The main elements of the windfarm project that have the potential to affect the landscape and visual amenity would comprise the 20 x turbines, met mast and substation.

7.4.2 Locational context

The proposed windfarm would occupy two separate sites located to the N and S of the R363 road to Athlone, within an attractive rural location c.11km W of Athlone and c.15km N of Ballinasloe. The site and environs are characterised by agricultural fields that are mainly defined by hedgerows and stone walls, and the lands slope down from N to S. The surrounding area is sparsely populated although there are a small number of dispersed houses and farms along the surrounding road network, and there are two small settlements to the E at Brideswell and W at Thomas Street / Dysert.

The windfarm infrastructure in the N Cluster would occupy relatively flat agricultural fields, whist the S cluster is more undulating and hillier, and the SW section, which forms part of the Killeglan Karst Landscape, is characterised by rocky outcrops and depressions (limestone boulders & dolines). The lands are not traversed by any watercourses or drainages ditches although there are several waterbodies in the wider area.

The Clonmacnoise Monastic Site is located to the SE of the site and the Rathcroghan Archaeological Complex to the far NW. There are several community features, amenity areas and recreational attractions in the wider area which include Lough Ree to the E and the River Suck at Ballyforan to the W. The Dublin to Galway Road (N6) is located to the S of Athlone and Ballinasloe and there are some small operational windfarms in the wider area.

7.4.3 Environmental Impact Assessment Report

Chapter 12 of the EIAR and associated Technical Appendices dealt with landscape, views, and potential visual impacts. Baseline conditions were described, and a visibility analysis was undertaken for a 20km radius of the site. The Landscape and Visual Impact Assessment (LVIA) included the creation of a Zone of Theoretical Visibility (ZTV) and Photomontages, along with a Viewpoint Assessment and Route Screening Analysis. Some 18 x viewpoints were assessed at several sensitive receptors which represented views from Protected Views, Scenic Routes, heritage sites, community and amenity areas, the road network and the wider rural environment, as well as from nearby houses.

The EIAR stated that the windfarm has been designed to minimise landscape and visual effects as far as possible, and it ranked the magnitude of impact at each location as ranging from Not Significant to Moderate. It concluded that the visual impacts would be more pronounced in the immediate vicinity of the site where most visibility is likely to occur, and Slight in the wider landscape including from highly sensitive views and receptors (incl. across Lough Ree & Clonmacnoise), and also from within surrounding counties.

The EIAR stated that the separation between the Protected Views, Scenic Routes heritage sites and amenity areas, waterbodies and elevated locations, taken in conjunction with the siting and location of the turbines within a slightly elevated area and the undulating character of the surrounding landscape would ensure that the turbines would not significantly detract from views across the site from any of these sensitive locations.

The EIAR also concluded that there would be no significant cumulative effects taken in-combination with other operational and permitted windfarms, which are located over 8km from the site, and that the visual impacts would diminish with distance.

7.4.4 Policy context

The 2006 Wind Energy Guidelines recommend that turbines should be set back 500m from the nearest sensitive receptor, whilst the 2019 Draft Guidelines recommend a separation distance of 4 x times the tip height between the closest turbine and the nearest point of the curtilage of the any house, in the interests of visual amenity. The 2006 Guidelines advise that locating the turbines in Hilly and Flat Farmland on ridges or plateaus is preferable, as is a regular spacing pattern and staggered linear layout on elongated ridges, and that the intermittent visibility of two or more wind energy developments is usually acceptable.

In relation to the current County Roscommon Development Plan, the windfarm site and environs lie within the Lough Funshininagh Stone Wall Grasslands and Esker Ridges LCA 34 which has a Moderate Value, and to the E of the Athleague & Lower Suck Valley LCA 12 which has a High Value. The site is located within an area designated as “Most Favoured” for windfarm developments and adjacent to an area that is mainly designated as “Less Favourable” to the W which also contains a small pocket of land that is designated as “Not Favourable”. The proposed S cluster would be partially located within the Killeglan Karst Landscape and to the N of the Castlesampson Esker, both of which are sites of national geological importance. Policies NH 10.11 and 12 seek to preserve and protect sites of county geological importance, and to promote and facilitate the development of geo-tourism.

There are several designated Protected Viewpoints, Scenic Views and Scenic Routes within the 20km study area which encompass views from within Roscommon and surrounding counties. The closest Protected View is from close to Clonmacnoise and the Shannon Callows c.17km to the S. The closest Scenic View (No. 22) is from across Lough Funshinagh c.6km to the NE (VP8), and from Scenic Route (No.8) in the townland of Lisfelim c.7.6km to the NE (VP7). There are also the several sensitive views from the Viewing Area across Lough Ree towards the site from Ballykeeran along the N56 to the E (VP14), and from Loughfarm along the Longford Scenic Route to the NE (VP15).

The respective Development Plans for the adjoining counties also contain policies and objectives which seek to protect and manage the landscape and views (incl. Galway, Longford & Offaly), which were considered in the EIAR.

7.4.5 Assessment

I surveyed the wind farm site, the surrounding area and the wider road network in County Roscommon and the neighbouring counties over two x 2-day periods in October 2022 and June 2023. I visited several locations to the N, S, E and W of the site at varying distances from the windfarm, in order to assess the visual dominance of the proposed turbines on the surrounding landscape and sensitive receptors (incl. Protected Views, Scenic Routes, heritage sites, amenity areas, settlements & dwelling houses). I had regard to the EIAR visual impact studies which are summarised in section 7.4.3 above. I had regard to any concerns raised in relation to landscape and visual amenity, and to any issues addressed in the applicant's Further Information and response submissions which are summarised in section 4.0. I also had regard to relevant national, regional and local planning policy which is summarised in section 3.0. I note that the Board's previous reason for refusal of planning permission, which is summarised in section 1.5 above, did not raise any concerns in relation to visual amenity, and that the Inspector's recommended second reason for refusal in relation to adverse landscape impacts was not accepted. The Board considered that the landscape was a robust landscape which was capable of accommodating windfarm development of the scale proposed.

Receiving landscape:

Wind turbines, by virtue of their height and scale, will undoubtedly have a visual impact on the receiving landscape. The proposed windfarm would be located entirely within the Lough Funshininagh Stone Wall Grasslands and Esker Ridges Landscape Character Area (LCA) which has a Moderate Value, and within an area designated as "Most Favoured" for windfarm developments. Although, the loss of some of the stone walls, particularly in the N Cluster, would have an adverse visual impact on the surrounding rural landscape at a micro level, the overall effect would not be significant after the implementation of mitigation measures (incl. replacement walls).

The proposed turbines would be set back from the local road, and they would be arranged in an orderly fashion to take account of the topographical features of the landscape. The position of the turbines within the site would generally accord with the 2006 Guidelines recommendations in relation to location, layout and spacing and the windfarm would be mainly acceptable in terms of landscape character and visual amenity. However, and notwithstanding this conclusion, I have concerns in relation to the visual impact of some of the turbines in the S Cluster on the character and setting of the Killeglan Karst Landscape.

Killeglan Karst Landscape:

Several of the turbines proposed for the S Cluster would be located within or close to the Killeglan Karst Landscape. This is a geological and geo-heritage site of national importance which is characterised by undulating hills and glacial moraines scattered with karstified limestone boulders and dolines (depressions). The GSI describes this landscape as unique and the only one of its kind in Ireland. Several of the Observers have also raised concerns about the visual impact of the proposed development on this landscape.

The Killeglan Karst Landscape comprises 3 x distinct sections to the E and W of the R357 road from Ballinasloe to Dysert / Thomas Street (SW, Mid & NE sections) and they extend from SW to NE across the landscape (Map attached). Two of the sections (Mid & NE) cover a portion of the lands within the S Cluster, and several of the 13 x turbines proposed for the S Cluster would be located within or close to the Mid and NE Sections of this Karst Landscape.

Although the turbines would be located within an LCA of Moderate Value and within a Most Favoured area for windfarms, the SW section would be located adjacent to the Athleague and Lower Suck Valley LCA which has a High Value, and which also encompasses the SW Section of the Killeglan Karst Landscape. This SW Section has been designated as an area which is “Not Favoured” for windfarms. Notwithstanding the difference in LCA designations and landscape values, the Killeglan Karst Landscape, which extends to the E and W of the R357, reads as a single landscape entity (albeit traversed by a regional road), and there are clear uninterrupted views of this karst landscape from along the R357 towards all three sections of the Karst Landscape.

I note that five of the proposed turbines (T8, T9, T10, T11 & T12) in the S Cluster would be located within, on the periphery, or close to the Mid-Section of the Killeglan Karst Landscape, and that a further 3 x turbines (T13, T14 & T16) would occupy a similar relationship with the NE section of this Landscape.

I acknowledge the applicant's submission that the character of this landscape has been modified by agricultural practices in recent years. Based on my examination of the site and environs, I would largely concur that the area within the NE-Section of the Killeglan Karst Landscape, which is located in the middle of the S Cluster, has been noticeably altered by land reclamation and boulder removal. I am therefore satisfied that the 3 x turbines located within or close to this section of the Karst Landscape would not have an adverse visual impact on its character or integrity.

However, based on my examination of the site and environs, I am satisfied that the Mid-Section of the Killeglan Karst Landscape, which is located in the SW section of the S Cluster, has not been altered to the same extent, and that the character of this area remains largely intact. Thus, in relation to the 5 x turbines (T8, T9, T10, T11 & T12) located within or close to the Mid-Section of the Killeglan Karst Landscape, I have concerns that the siting of these turbines would have an adverse visual impact on the integrity of the Karst Landscape.

Having regard to the unique geological nature of this landscape, and its integral relationship to the SW-Section of the Killeglan Karst Landscape on the W side of the R357, which also lies within a High Value LCA, I consider that these turbines should be omitted from the project in their entirety. However, if the Board do not concur with this assessment, I recommend that it consider the omission of the 3 x turbines that are entirely located within the Mid-Section of the Killeglan Karst Landscape (T9, T10 & T12), in order to protect the unique geological heritage and landscape character of this area. This could be addressed by way of a planning condition.

Sensitive receptors (Views, Scenic Routes & Villages):

There are no designated ***Protected Views or Scenic Routes*** in the vicinity of the site although there are several protected long distant views towards the site in the wider area (incl. adjacent counties). This includes a Protected View from Clonmacnoise in Co. Offaly along the R444 to the W of Clonmacnoise at Creevagh towards the windfarm site, 2 x Scenic Route Views W from around Lough

Funshinagh at Lisfelim in Co. Roscommon, and various views SW from Scenic Routes across Lough Ree in Co. Longford. There are also several long-distance non-designated attractive views towards the site across Lough Ree from the surrounding counties. Although the Protected View from the Clonmacnoise Monastic Site to the SE of the windfarm site extends to the S, the view N across the River Shannon Callows towards the windfarm site is also very attractive.

In relation to ***near distance views***, the turbines would be highly visible from the small settlements at Four Roads, Lugboy, Dysert/Thomas Street and Brideswell to the N, S, W and E, and from along the R363 road to Athlone and the R357 road to Ballinasloe. They would be intermittingly highly visible from along the local roads that surround the 2 x turbine clusters, including at Commeen to the N and Skyvalley to the SE. Although the turbines would constitute a very dominant feature on the relatively open landscape from these nearby locations, I note that none of the views are protected.

In relation to ***medium distance views***, the upper sections of some turbines (incl. nacelle and/or blades) would be intermittingly visible from several locations in the wider area including from Ballyforan Marina on the River Suck to the W, Lough Funshinagh at Lisfelim to the NE, Curraghboy Village to the NE, and Taughmaconnell Village (GAA Club) to the S, and from along the surrounding road network. Although the turbines would be intermittently visible when viewed from these locations and the surrounding road network, the views are not protected, and the surrounding landscape value is classified as Moderate. (Issues related to the Killeglan Karst Landscape are addressed above).

In relation to ***long distance views***, there would be some long-distance views towards the proposed windfarm from the outer perimeter of the 20km radius to the N, S, E and W (incl. counties Galway, Longford, Offaly & Westmeath). This would include from the Viewing Areas at Ballykeeran along the N56 to the E (and N of Athlone) and at Loughfarm along Longford Scenic Route 20 to the NE across Lough Ree towards the windfarm site, from Clonmacnoise to the S, and from Lanesborough Bridge to the N where the River Shannon enters Lough Ree. Having examined the views from these locations, the visual impacts of the turbines would range from negligible to low, with no significant visual impacts on the landscape or views

anticipated, having regard to the extent of the substantial separation distances, the undulating character of the surrounding and intervening landscape.

In conclusion, the visual impact of the turbines would decrease with distance and the visual impact on the receiving landscape, surrounding area and sensitive receptors would not be overly dominant. Views of the turbines from any of these locations would not constitute a reason to refuse permission of alter the layout.

Dwelling houses & farms:

The settlement pattern for dwelling houses and farms along the surrounding local road network is dispersed and low density, although there is a concentration of one-off houses located along the R363 which bisects the two clusters, and along the R357 to the W of the clusters. Although there will be views of the turbines from these houses, and intermittently from along the surrounding regional and roads, I am satisfied that the turbines would not be overly dominant, and they will not adversely impact visual amenity to any significant extent. The separation distance between the houses and the nearest turbines would exceed the 2006 Guideline of 500m and the Draft 2019 Guideline of 720m (4 x 180m max tip height). Having regard to European and National policy in relation to renewable energy and to the exceedance of minimum separation guidelines, on balance, I am satisfied that the proposed windfarm is acceptable at this location and that dominant views of the turbines from any nearby houses would not constitute a reason to refuse permission of alter the turbine layout.

Recreational, amenity, tourist & scenic areas:

The turbines would be intermittently visible from a number of recreational, tourist and scenic areas (incl. marinas, amenity areas, lakes, walking trails & fishing locations). However, the overall visual impact would not be significant having regard to the intervening undulating topography of the wider area which would only afford intermittent views of the upper sections of the turbines (nacelles and/or blades), and the separation distances which would serve to moderate the visual impacts on many of the views towards the site. Although the turbines would be intermittently visible at amenity areas there is no empirical evidence to confirm that windfarms have negative impacts on recreation and tourism, whilst some studies indicate a net

positive impact. Having regard to European and National policy in relation to renewable energy, on balance, I am satisfied that the proposed windfarm is acceptable and that any intrusive views of the turbines would not constitute a reason to refuse permission of alter the layout of the turbines.

Cumulative impacts:

The EIAR also deals with the potential for in-combination effects with some other smaller operational windfarms in the wider area. There are three other proposed, permitted and operational windfarms within a 8km to 20km radius of the windfarm site (incl. Skrine & Derrane [2 x turbines] and Kilcash [1x turbine]). Some of the permitted and operational turbines would be visible from several further afield elevated locations which would extend to the outer perimeter of the 20km Study Area. No significant adverse cumulative impacts are anticipated for short distance views towards the windfarm site, and although the turbines would be slightly visible from further afield elevated areas, they would not form a dominant feature because of the separation distance and intervening undulating landscape. Although there is some potential for in-combination effects, they are not expected to be significant with no adverse cumulative impacts anticipated.

Decommissioning Impacts:

None anticipated following the removal of the turbine structures.

Conclusion:

Overall, on balance, the proposed development would not be unduly visually intrusive having regard to the gently undulating character of the wider and intervening landscape, level of intermittent forestry coverage, the separation distances between the sensitive viewpoint locations and the windfarm site, and also the distance between the proposed and existing windfarm developments. With the exception of the anticipated adverse impacts on the visual integrity of the Killeglan Karst Landscape, which is a geological landscape of national importance, the proposed turbines would not otherwise constitute an unacceptable dominant feature on the landscape or interfere with long distance views towards and across the site, with no significant in-combination visual impacts anticipated.

7.4.6 Conclusions:

Residual Effects: Residual impacts are not predicted to be significant, subject to the recommended omission of turbines.

Cumulative Impacts: Any cumulative Landscape impacts during the operational phase when taken in-combination with other windfarms, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered any written submissions made in relation to the landscape and visual amenity, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise, subject to the recommended omission of turbines.

Overall conclusion: Having regard to all of the above, I am satisfied that the most significant visual impacts would be from within the site itself and its immediate environs, intermittently from along the surrounding local and regional road network and from several dispersed houses that are located around the site. There would also be minor intermittent views from some further afield heritage sites, waterbodies, villages and amenity areas. The proposed development would not adversely affect the visual amenities of the area or interfere with any protected views to any significant extent, subject to the recommended omission of turbines. The proposed development would not give rise to any significant adverse cumulative impacts with other windfarms in the wider area. The height and rotor blade dimensions of the proposed turbines would not give rise to a significant adverse visual impact elsewhere having regard to the overall scale of the site, the undulating character of the surrounding landscape, and the level of natural screening from the intermittent intervening afforested areas.

7.5 Material Assets (Movement and access)

7.5.1 Project description

The project comprises the construction of a 20 x turbine windfarm and all associated infrastructure. The potential movement impacts relate to the delivery of construction materials and turbine components to the site along the national, regional and local road network, and the removal of equipment and materials after the works are complete, and the later removal of components during the decommissioning phase.

The main infrastructure elements include:

- Minor road works long the delivery / haul routes.
- Provision of new site access points off the R363: -
    - Access A - Private access track to N cluster (c.2km).
    - Access B - New access off the L7535 (via R363) to S cluster.
    - Access C - New access directly off the R363 to S cluster.
- Widen the L7535 local road at its junction with the R363 (5m x 415m).
- Minor works to the L7602 local road.
- New and upgraded internal access tracks / service roads.
- Laying grid connection cables under the R363 verge (c.11km).

7.5.2 Locational context

The proposed development would occupy two separate rural sites located in the townlands of Cronin and Skyvalley c.11km to the W of Athlone and c.15km N of Ballinasloe. The sites are located to the NE and SE of Dysert / Thomas Street, to E of the R357 road to Ballinasloe, and N and S of the R363 road to Athlone. The vehicular access to both sites is off the R363. The surrounding area is sparsely populated although there are a small number of dispersed houses and farms along the regional and local road network, and there are two small settlements to the E at Brideswell and W at Dysert Village / Thomas Street.

7.5.3 Environmental Impact Assessment Report

Chapter 14 of the EIAR and associated Technical Appendices dealt with the traffic and transport effects of the proposed windfarm on the road network during the construction, operational and future decommissioning phases. Various traffic studies were undertaken, including a Route Access Survey, and a Transport/Traffic Management Plan will be prepared. The turbine delivery route from Galway Port will be along the M6, R362 and R363 to 3 x site entrances off the R363. The construction materials delivery routes would be similar to the turbine delivery route.

The EIAR described the characteristics of the road network, delivery vehicle specifications required to transport the abnormally large components and stated the delivery and haul routes would require any some localised remedial works along the road network. It identified a number of sensitive receptors along the haul route (incl. community facilities, heritage features & dwelling houses).

The EIAR carried out traffic counts which were used to describe existing traffic volumes, assess the impacts of traffic generation and the capacity of the road network to accommodate additional construction phase traffic (incl. abnormally large vehicles). It highlighted the extent of the works required along the delivery / haul route, along the L7535 local road (which would be widened), and in the vicinity of the site entrances off the R363 to provide for adequate visibility. It noted that the grid connection cabling works along the R363, R362 & L2047 to the Monksland 110kV substation (c.11km) will have localised construction phase impacts along these roads, along with minor traffic disruption (incl. single lane closures).

During the c.24-month construction phase, a substantial number of HGV loads will be delivered to and from the site (c.20,829), with an average of c.53 loads per day. Concrete deliveries account for the bulk of the movements (70 per foundation & 15 trucks/hr) followed by aggregate and turbine deliveries (c.212 loads in total), and then by equipment and material removal after the works are completed (c.70 loads). Staff movements are estimated to be c. 40 x 2-way trips day on average. HGV traffic volumes are predicted to marginally reduce capacity on the national road network which is estimated to have adequate spare capacity, and an insignificant reduction

predicted. The traffic impacts on the national, regional and local road network are expected to be negative but short term and temporary during the construction phase, and the works are predicted to have a negligible temporary effect on traffic volumes.

The EIAR concluded that the road network has sufficient spare capacity to accommodate the anticipated increase in traffic volumes during the construction phase. During the operational phase the increase in traffic will be limited to a small number of visiting maintenance employees. It is anticipated that the future decommissioning impacts on the road network will be less significant than during the construction phase as they will not include the delivery of concrete and construction materials to the site.

The EIAR concluded that only short-term temporary impacts during the construction phase are predicted and that the mitigation measures (incl. Transport / Traffic Management Plan, timing of deliveries, liaison with the council & local communities, and a pre & post construction road & bridge condition surveys) will minimise the impacts on the road network during each phase. The EIAR did not predict any cumulative impacts in-combination with other plans and projects (incl. quarries & windfarms) in the surrounding and wider area, or any other significant adverse impacts during the operational or future decommissioning phases.

7.5.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above.

7.5.5 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area, and the wider road network over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR traffic and movement studies which are summarised in section 7.5.3 above and the concerns raised by the Council, Prescribed Bodies (incl. TII) and the Observers which are summarised in section 4.0, and the applicant's response to these concerns in the Further Information submissions. Their concerns related to general disturbance, traffic generation and safety, abnormally large loads and cabling works. I also had regard to relevant national, regional and local

transportation and planning policy, which is summarised in section 3.0. The TII and County Council had no specific objections to the proposed development subject to compliance with standard conditions and licence requirements. I note that the Board's previous reason for refusal of planning permission, as summarised in section 1.5 above, did not raise any concerns in relation to movement and access.

Road network capacity:

Vehicular access to the proposed development would be via the wider national, regional and local road network (incl. M6, R362 & R363). There would be a noticeable increase in the volume of HGV traffic during the c.24-month construction phase of the project. However, having regard to the applicant's road traffic surveys, my assessment of the site and surrounding area, and the lack of any capacity related concerns being raised by TII and the Council, I am satisfied that there is adequate capacity within the road network to accommodate the additional traffic volumes. The increase in traffic volumes would be temporary and short term during the construction phase, less during the decommissioning phase, and negligible during the operational phases. The proposed development would, therefore, not result in excessive long-term traffic generation, or give rise to a traffic hazard.

Delivery route:

The proposed use of the motorway network from Galway Port via the M6, and then the R362 and R363 regional roads to the site is an acceptable delivery route for the turbine components and construction materials. TII referenced the strategic importance of the national road network, had no objection in principle to the proposed delivery route, requested that all works should comply with TII standards and that permits may be required for abnormal or heavy loads. Some minor works will be required along the road network and at junctions to accommodate the abnormally wide loads. It is possible that the traffic movements and heavier loads could have a physical impact on the road network, although the applicant has confirmed that the vehicle weights would not be unduly heavy. Notwithstanding this assertion, the capacity of all structures along the delivery route should be checked and a technical load assessment required, and any works to the road network should be at the developer's expense following completion of the project. These concerns

could be addressed way a planning condition which requires compliance with TII and RCC requirements. I note that TII and the Council did not raise any specific concerns in relation to the underground cabling along the R363, R362 and L2047 on the approach to the Monksland 110kV substation in Athlone, other than to ensure compliance with standards requirements. Concerns raised by one of the Observers (Brendan McMahon) in relation to potential impacts on boundary wall stability walls resulting from the cabling works is noted and would be covered by the aforementioned provisions in relation to repair works. Council concerns in relation to the position of the underground cable within the grass verge would be addressed in the final agreed CEMP.

Potential adverse impacts to the road network would be mainly managed by way of the EIAR mitigation measures which are outlined above, and which would include a CEMP and Transport/Traffic Management Plan, and a range of temporary traffic control measures which should be put in place with the agreement of the County Council. Abnormally large or wide loads should be delivered when traffic volumes are low with no significant impacts on traffic volumes or road safety anticipated as a consequence. The use of the road network also has potential to cause disturbance to local communities along the delivery route and the developer should ensure that local people are notified in advance of any plans to transport large loads to the site. I am satisfied that the proposed delivery arrangements would not give rise to a traffic hazard or endanger the safety of other road users and that any disturbance to local communities along the route would be short term and temporary in nature. The temporary traffic management measures should be put in place for the entire duration of the works in order to avoid a traffic hazard along the local road network.

Vehicular access:

Vehicular access to the proposed development during the construction phase would be via 3 x entrances off the R363 to the N and S Clusters, and via the wider local, regional and national road network. Any traffic risks associated with the use of this section of the road network and any upgrade of the infrastructure would be managed by the EIAR mitigation measures which are outlined above, and subject to compliance with TII and Council requirements. These measures include minor works along the delivery route and at the site entrances. A traffic management plan and

temporary traffic controls which should be put in place for the duration of the works with the agreement of the County Council. Vehicular access to the operational windfarm would also be directly via the entrances off the R363 and indirectly off the widened L7535 local road. The surrounding local road network has adequate spare capacity to accommodate the anticipated increase in traffic, and no significant impacts on traffic volumes or road safety are anticipated during any of the phases (construction, operational or future decommissioning). I am satisfied that the vehicular access arrangements would not give rise to a traffic hazard or endanger the safety of other road users. Notwithstanding the above, any maintenance works to the public road (and properties) arising from the development should be at the developer's expense.

Site access & internal access tracks:

The proposed development would provide for 3 x site entrances directly and indirectly off the R363 during the construction phase, along with the widening of the L7535 from 3m to 5m over a distance of c.415m from its junction with the R363. Sightlines along the road network would be adequate and the access arrangements are considered acceptable subject to compliance any further Council requirements in relation to visibility and traffic safety. The proposed development would also provide a network of internal tracks to provide access to and between the proposed turbines and other project elements which is also considered acceptable. However, issues related to potential adverse impacts on site stability, geology, hydrogeology and ecology will be addressed in the following sections of this report.

Decommissioning Impacts:

Less impacts on the road network anticipated than during the construction phases as only the turbines and related equipment would be removed, subject to a similar range of mitigation measures.

7.5.5 Conclusions:

Residual Effects: There will be a short-term increase in traffic movements during the construction and future decommissioning phases but no significant increase during the operational phase. Residual impacts are not predicted to be significant.

Cumulative Impacts: Any cumulative traffic impacts during the operational phase when taken in combination with other plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered all the written submissions made in relation to movement and access, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion: Having regard to all of the above, I am satisfied that the proposed development would not give rise to a traffic hazard or endanger the safety of other road users, subject to the full implementation of the EIAR mitigation measures and compliance with any recommended planning conditions. The proposed development would not give rise to any significant adverse cumulative traffic impacts in-combination with other windfarms, the grid connection route or plans and projects in the area.

7.6 Population, Human Health, Air & Climate

7.6.1 Project description

The project would comprise the construction of 20 x turbine windfarm and associated infrastructure including a met mast, substation, temporary construction compounds site access, underground cabling and associated site works. The visual impacts have been assessed in section 7.4 above and the traffic impacts have been assessed in section 7.5. This section will deal the potential impacts of noise, shadow flicker, dust and visual intrusion on the residential amenities of properties in the vicinity with respect to human beings, population and human health.

7.6.2 Locational context

As previously stated, the windfarm site would comprise 2 x turbine clusters within a slightly elevated and moderately undulating rural area to the W of Athlone and N of Ballinasloe. The clusters are located to the NE and SE of Dysert Village / Thomas Street, to the E of the R357 road to Ballinasloe, and N and S of the R363 road to Athlone. The surrounding area is sparsely populated although there are a small number of dispersed houses and farms along the regional and local road network. The highest density of housing is located along the R363 between Brideswell and Dysert Village, and the R357 between Four Roads and Lugboy. There are also some larger further afield settlements at Ballyforan to the W, Carroward to the NW and Curraghboy to the NE. There are several community and recreational uses in the wider area including churches, schools, and GAA pitches.

7.6.3 Environmental Impact Assessment Report

Chapters 5, 9, 10, 11, 12 and 14 of the EIAR and associated Technical Appendices dealt with the human environment including: - population & human health (economic activity, tourism, employment & shadow flicker); public water supply, air and climate; noise and vibration; visual amenity; and material assets (traffic). These chapters identified the potential impacts on residential amenity and the wider human population during the construction, operational and future decommissioning phases.

Chapter 5 of the EIAR and Technical Appendices dealt with ***population and human health*****.** It described the population, employment, economic activity, land uses, services and tourist attractions in the surrounding area. It stated that there would be positive health and environmental effects related to a reduction in the use of fossil fuels to generate energy. The EIAR identified c.109 dwelling houses (c.6 uninhabited) within a 1km radius of the proposed windfarm and noted that the nearest house (H62) is located just over 720m from the nearest turbine (T8). The nearest towns at Athlone and Ballinasloe are located c.11km to the E and c.15km S of the windfarm site, there are several small villages within a c.5km radius of the site, and the nearest settlement at Dysert Village /Thomas Street is within c.1.5km of the nearest turbine. The EIAR concluded that following the implementation of mitigation measures (related to noise, shadow flicker & traffic) and the use of best construction practices and ongoing monitoring, the proposed windfarm would not result in any significant adverse effects on human beings in the surrounding area.

Chapter 10 of the EIAR and Technical Appendices dealt with ***air quality and climate***. It stated that there would be no emissions from the wind farm development, and given the nature of the project, there would be no adverse long-term impacts on air quality. It stated that there could be short-term impacts by way of dust during the construction phase with regard to delivery vehicles, excavations and construction works, but noted that the nearest dwellings are over 700m away. There would be no significant loss of carbon storage capacity as the agricultural lands are not underlaid by peatland soils. However, the renewable energy project would result in the offset of a substantial amount of carbon emissions over its 30-year operational lifespan (c.4.8 million tonnes), with an estimated “pay-back” period of just under 2 years. The EIAR did not predict any adverse impacts on air and climate subject to mitigation measures (incl. best construction practice, traffic management & vehicle maintenance).

Chapter 11 of the EIAR and Technical Appendices dealt with ***noise and vibration,*** and it concluded that there would be some disturbance during the construction phase (incl. from site excavations & traffic), and minimal disturbance during the operational noise (incl. from turbines & substation) at the nearest noise sensitive locations. The assessment included desktop and field studies and had regard to the

existing 2006 Wind Energy Guidelines and the 2019 Draft Guidelines. The EIAR identified a substantial number of noise sensitive locations (dwelling houses) within a 2km radius of the windfarm (incl. some unhabituated & participating properties). It carried out a Baseline Noise Survey and constructed a Noise Contour Map, and noise monitoring surveys were undertaken at 9 x sensitive locations around the perimeter of the site. This included 4 x Noise Monitoring Locations at H167 (A), H175 (B), H270 (C) and H273 (D) around the N cluster, and 5 x NLMs at H062 (E), H140 (F), H261 (G), H315 (H) and H323 (I) around the S cluster. Background measurements were recorded, and a variety of wind speeds and wind shear corrections formed part of the prediction model for day and night-time noise during the operational phase.

Construction phase:

Worst case construction noise and vibration levels were predicted at the nearest noise sensitive locations at the N and S clusters, and along the grid connection and delivery routes. The worst case predicted total noise levels for construction related activities at ***turbine hardstands, met mast and substation*** locations (incl. site excavation & HGV movements) was predicted to be vary between 57, 51 and 48 dB LAeqT at distances of 285m, 560m and 720m from the proposed works. The worst case predicted noise levels at noise sensitive locations were predicted to vary between: -

- c.33 and 47dB LAeqT at the nearest noise sensitive receptor in the N Cluster (H270 & T4 over c.563m) - *participating property*
- c.30 and 44dB LAeqT at the nearest noise sensitive receptor in the S Cluster (H062 & T8 over c.720m),
- c.40 and 54dB LAeqT at the nearest noise sensitive receptor to the met mast in the S Cluster (H402 over c.285m) - *participating property*
- c. 51dB LAeqT at the nearest noise sensitive receptor in the S Cluster (H137 & substation over c.540m).

The EIAR concluded that the construction noise activities (hardstands, substation, met mast & substation) are below the recommended 65dB LAeq criteria.

The worst case predicted total noise levels for construction related activities along the ***grid connection route*** was predicted to be vary between 85 and 65 dB LAeqT at distances of between 10m and 70m from the proposed works. The EIAR concluded that although most of the GC construction noise activities are above the recommended 65dB LAeq criteria for distances under 70m from the works, the impact would be transient and short term.

The worst case predicted total noise levels for construction related activities at the three new ***site entrances*** were predicted to be vary between 79 and 66 dB LAeqT at distances of between 20m and 60m from the proposed works. The EIAR concluded that although most of the site entrance construction noise activities are above the recommended 65dB LAeq criteria for distances under 60m from the works, the impact would be transient and short term.

The worst case predicted total noise levels from ***HGV traffic*** were predicted to be c.59 dB LAeq,1hr at a distance of 5m from source, which the EIAR predicts are below the recommended 65dB LAeq criteria.

In relation to ***vibration impacts,*** a greater magnitude is predicted in close proximity to the source, vibrations measured at another unrelated site recorded levels which ranged from 0.13 to 0.25 mm/sec Peak Particle Velocity over a distance of 50-60m, which the EIAR concluded are below the recommended criteria.

In conclusion, the EIAR did not predict any significant adverse noise or vibration impacts during the construction phase subject to mitigation measures (incl. best construction practice and adherence to relevant guidance & standards). The EIAR did not predict any adverse cumulative construction noise impacts.

Operational Phase:

The operational noise levels were calculated for all Noise Sensitive Locations (NSLs) identified within 3.5km of the proposed turbines, as this corresponds with the 35dB LA90 Contour. Noise levels at were predicted at a 10m height at varying wind speeds (4 to 9m/sec), based on the lowest background noise levels measured at six NSLs (H258, H259, H269, H270, H316 and H323). A noise contour for standard

mode operation rated at 7m/s wind speed was applied (worst-case scenario). No exceedance of noise levels (40dB(A)) at any of the wind speeds was predicted for the NSLs. The EIAR predicted that noise levels would not exceed the accepted criteria for day and night-time noise, in line with current and emerging guidance, with no noticeable effects identified at any of the properties over various wind speeds. The EIAR states that the choice of turbine type would avoid Tonal Noise, Infrasound or Low frequency Noise disturbance, and that the operational substation would not cause noise disturbance at the closest sensitive receptor within the noise contours. The EIAR did not predict any adverse operational noise cumulative impacts.

Chapter 5 of the EIAR and Technical Appendices also dealt with ***shadow flicker***. The computer modelling examined the potential for shadow flicker occurrence at c.296 x properties (incl. 15 x uninhabited & 8 x participating) located within 1.62km of the turbines (10 x rotor diameter of 162m). The nearest inhabited dwelling (H62) is located just over c.720m from T8. The assessment concluded that in the unmitigated Worst-Case Scenario there is potential for shadow flicker to occur at c.194 of the remaining 273 properties (30 minutes per day and/or 30 hours per year, with 100% sunshine where the shadow of the turbine passes over the structure, & no topographical screening). The EIAR stated that this would be an extremely rare occurrence and it did not predict any adverse shadow flicker impacts subject to mitigation measures (incl. monitoring, logging complaints & the use of a turbine control/shutdown system to prevent operation at times when shadow flicker might cause a disturbance). The EIAR did not predict any adverse cumulative impacts.

7.6.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above.

7.6.5 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area, and the wider road network over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR air quality, noise, shadow flicker and traffic assessments which are summarised in section 7.6.3 above. the concerns raised by the Council, Prescribed Bodies (incl. TII) and the Observers which are summarised in section 4.0, and the applicant's response to these concerns in the Further Information and

response submissions. Their concerns related to general disturbance, visual impact, traffic generation and safety, noise, shadow flicker, residential amenity. The Prescribed Bodies and County Council Chief Executive had no specific objections to the proposed development subject to compliance with standard conditions and licence requirements. However, the Elected Members requested a substantially enlarged separation distance between the turbines and houses. I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0. I note that the Board's previous reason for refusal of planning permission, as summarised in section 1.5 above, did not raise any concerns in relation to population and human beings.

The proposed windfarm will provide employment opportunities during the construction phase although post construction employment would be limited a small number of positions related to ongoing maintenance. The project will give rise to financial benefits by way of commercial rates and community gain benefits. The potential impacts on residential amenity arising from the construction and operational phases are assessed below. Issues related to landscape and visual amenity, and traffic and movement have been assessed in sections 7.4 and 7.5 above.

Dust and air quality:

The proposed excavation and construction work, and the activities associated with the three access points could also give rise to dust emissions with a resultant impact on local air quality. However, it is not anticipated that this would have any significant adverse long-term impacts on residential amenity or human health, having regard to the temporary nature of the construction works (c.18 months) and to the separation distances between the proposed works and neighbouring houses. The full implementation of the mitigation measures and stringent compliance with best construction practices would minimise any potential impacts on nearby houses, with no significant in-combination adverse impacts anticipated.

Air and Climate:

There would be no significant loss of carbon storage capacity as the agricultural lands are not underlaid by peatland soils. However, the renewable energy project would result in the offset of a substantial amount of carbon emissions over its 30-

year operational lifespan (c.4.8 million tonnes), with an estimated “pay-back” period of just under 2 years. Refer to section 6.4 above for a more detailed assessment of Carbon balance and Climate impacts.

Noise and disturbance – construction phase:

Given the nature and scale of the proposed development, the construction works have the potential to give rise to noise disturbance during the c.24-month construction phase (incl.18-month site prep works & 6-month turbine installation works). This disturbance would mainly relate to site clearance and preparation works, concrete pouring, the delivery of large components and materials along the local road network, and works which include the provision and / or upgrade of site entrances, and local road widening. It would also include excavation and construction works within the site for the turbines and substation (incl. extensive concrete pouring) and the construction of new and upgraded access tracks throughout the site. Although these works would be short term and temporary, they have the potential to adversely affect residential amenities in nearby houses in the surrounding area and along the local roads around the site, and along the main delivery and haul routes. The proposed works along the grid connection route along the R363 to the E could also give rise to disturbance at nearby houses and road crossings where mitigation measures would be implemented, although most of this route is sparsely populated until it reaches the outskirts of Athlone. The works would be of a short-term duration. The concerns raised by the Observer in relation to boundary wall stability are addressed in 7.5.5 above.

It is noted that the surrounding area is not densely populated although there are c.103 occupied properties within a 1km radius of the proposed development which are mainly located to the N, S and W of the 2 x clusters. Most properties are located in excess of 1km from the nearest turbine and the nearest inhabited property is located just over 720m from T8 (H62) to the W along the R357. Although the overall construction phase would take c.24 months to complete, most of the site preparation works would occur over a shorter time span of c.18 months, and any adverse noise impacts on nearby properties would be localised, short term and temporary.

Given the results of the construction phase noise assessment (summarised above in section 7.6.3), which are considered to be robust, and having regard to the separation distances to the nearest noise sensitive properties, the construction work impacts would be mainly related to noise and disturbance along the delivery route and at the site entrances, which would also be short term and temporary.

The EIAR noise control and monitoring measures are considered adequate and any outstanding noise concerns could be addressed by way of conditions which would place restrictions of delivery times and hours of construction. Local residents should be notified in advance of any major construction works including mechanical excavations and of the transport of large pieces of plant and equipment along the local road network. The concerns raised by the Elected Member and Observers in relation to blasting could be addressed by way of a planning condition prohibition, although I note that this activity does not form part of the current proposal. No significant adverse cumulative construction phase noise impacts are anticipated in-combination with other plans and projects in the surrounding area.

Noise and disturbance - Operational phase:

The 2006 Wind Energy Guidelines require an assessment of the effects of operational noise at sensitive locations. It recommends in low noise rural environments where background noise is less than 30dB(A), that the daytime level of the LA90,10min of wind energy noise be limited to an absolute level within the range of 35-40dB(A), whilst 43dB(A) should not be exceeded at night-time in other locations. It is noted that an upper limit of 45 dB (A) is considered acceptable for consenting owners.

The 2019 Draft Revised Guidelines have more stringent requirements for day and night-time noise. The proposed amendments provide a much more detailed level of guidance (in line with WHO standards) and Technical Appendices that deal with the treatment and assessment of noise. It requires the applicant to provide for an assessment of Relative Rated Noise Limits (RRNL) measured as LA rated 10min which takes into account the cumulative impact of noise levels resulting from other existing and permitted windfarms within an identified study area (where the RRNL may exceed 30dB LA90 up to 12m/s wind speed or an area within 3km of the project). The noise levels should not exceed background noise levels by more than

5dB (A) within the range 35-43dB (A) or 43dB (A) overall (day or night). Appendix 2 includes a noise compliant procedure to be submitted by the applicant, suggested planning conditions (incl. scheduled commitments, RRNLs & an annual monitoring report) and a Noise Verification Monitoring for larger projects. Applications should be accompanied by a noise modelling report, stated compliance with limits, a methodology for a post completion noise survey, a map of noise monitoring locations, and a proposal for a documented complaint handling procedure.

The EIAR defined a 3.5km Operational Noise Study Area around the proposed windfarm and it identified several hundred noise sensitive receptors (occupied houses) within this area where operational noise levels were predicted. It identified the nearest sensitive properties at H62 along the R357, which would be c.720m to the W of T8. It used the results from six of the noise monitoring locations (NSLs) around the two clusters (H258, H259, H269, H270, H316 & H323) as a basis for predicting operational noise under various wind speeds.

The results of this assessment are summarised in section 7.6.3 above and it concluded that even under the worst-case scenarios, noise levels would not exceed 40dBA at any house under any wind speed circumstances. There are no other occupied or non-participating dwelling houses located within 720m of the proposed turbines. I am satisfied, based on the results of the Operational Noise Assessments, that the predicted noise levels would not exceed the accepted criteria for day and night-time noise at any of the properties which is in line with the current 2006 Guidelines, to any significant extent. However, a planning condition should be attached to ensure that acceptable noise levels are not exceeded at any nearby houses, particularly under extreme weather conditions, and that a turbine curtailment system is put in place.

The Observers (Claire & Damien Cooney) requested site specific noise tests at their property. However I am satisfied with the robustness of the EIAR testing and assessment, and that their concerns would be addressed by way of the aforementioned and recommended planning condition.

The proposed development also complies with the Draft Revised Wind Energy Guidelines which was issued in December 2019. The maximum predicted noise levels at the nearest noise sensitive locations under high wind conditions within the surrounding rural area would not exceed the 43dB (A) absolute limit set out in the 2019 Draft Amended Guidelines. Compliance with other elements of the 2019 Draft Amendments (incl. monitoring & reporting) could be addressed by way of a planning condition in addition to the previously suggested curtailment strategy.

Having regard to all of the above, I am satisfied that the proposed development would not seriously injure the residential amenities of any houses or other sensitive receptors in the surrounding area by way of noise disturbance, subject to compliance with the EIAR mitigation measures and the recommended planning conditions. No significant adverse cumulative operational noise impacts are anticipated in-combination with other plans and projects in the surrounding area.

Shadow flicker:

The 2006 Wind Energy Guidelines require an assessment of the effects of shadow flicker on dwelling houses and community buildings located within a specified radius of the turbines (i.e.10 x rotor blade diameter). The Guidelines also recommend that shadow flicker should not exceed 30 hours per year or 30 minutes per day, and state that at distances of greater than 10 x rotor diameters the potential for shadow flicker is very low. The 2019 Draft amendments to the Guidelines require the submission of a shadow slicker assessment and the attachment of a condition to ensure that there will be no shadow flicker at any nearby dwelling or other sensitive property by way of a computerised turbine shutdown at critical times.

The applicant applied the 10-x rotor blade diameter equation (10 x 162m) and identified c.296 x properties (incl. 15 x uninhabited & 8 x participating) potential shadow flicker receptors within c.1.62km of a turbine (dwelling houses). The closest house is H62 along the R357 which is located just over 720m to the W of T8 in the S Cluster. The computer modelling examined the potential for shadow flicker occurrence at all of these properties and concluded that c.194 properties could be affected under worst case conditions (30 minutes per day and/or 30 hours per year, with 100% sunshine where the shadow of the turbine passes over the structure, and

no topographical screening). Given that optimum weather conditions are unlikely to occur, I am satisfied that the rotating blades would not cause a disturbance at any nearby properties subject to the implementation of mitigation measures. This would include monitoring, logging complaints and the use of a turbine control/shutdown system to prevent operation at times when shadow flicker might cause a disturbance).

Having regard to all of the above, I am satisfied that the proposed turbines would not seriously injure the residential amenities of any houses or sensitive receptors in the surrounding area by way of shadow flicker, subject to compliance with the EIAR mitigation measures and any recommended planning conditions, with no significant in-combination adverse impacts anticipated.

Residential visual amenity:

The 2006 Wind Energy Guidelines require a 500m setback between a turbine and the nearest dwelling house in order to protect residential visual amenity. The 2019 Draft amendments to the Guidelines also require a 500m setback or a setback in the order of 4 x times the tip height of the turbine, depending on its's height.

The proposed turbines would occupy an open, slightly elevated and undulating rural landscape, and by virtue of their height and position they would be visible from a variety of locations in the surrounding area. The EIAR identified c.103 occupied properties within a 1km radius of the proposed development which are mainly located to the N, S and W of the 2 x clusters.

None of the houses are located within either 500m or 720m (180m x 4) of the proposed turbines (in line with the 2006 Guidelines and 2019 Draft revisions), although some are located just over c.720m (H62 & T8). Although most of the houses would be located outside a 1km radius of the windfarm, they would have partial views of the turbines because of their position relative to the 2 x clusters, although in many cases this would mainly relate views of the upper sections of the turbines (blades and/or nacelles) but not the entire structures.

Having regard to my assessment of the site and surrounding area, the physical characteristics of the terrain, the absence of dwelling houses within either a 500m or

720m radius to the turbines, the separation distances between the proposed windfarm and most of the houses, I am satisfied that although the turbines would be intermittently visible from the surrounding area, the proposed development would not have a significant adverse impact on the visual amenities of dwelling houses or community buildings in the vicinity. Although the visual impacts would be higher from a small number of locations (incl. Dysert Village and along the R363 & R357), the resultant effects on residential amenity would not warrant a refusal of permission or an alteration to the turbine layout, having regard to national and regional policy in relation to renewable energy. No significant in-combination adverse visual impacts area anticipated having regard to the substantial separation distance between the proposed windfarm and the existing small scale operational windfarms.

Public and private water supplies:

Refer to section 7.8.5 below for a detailed assesmsent.

Decommissioning Phase:

Less impacts on the environment anticipated than during the construction phases as only the turbines and related equipment would be removed, subject to a similar range of mitigation measures in relation to construction noise, dust and water quality.

Conclusion:

Having regard to all of the foregoing, I am satisfied that the proposed development would not have a significant adverse impact on population or human health by way of shadow flicker, dust, noise, vibration, visual intrusion or climate, and no significant adverse cumulative impacts are anticipated in-combination with other plans and projects, including any permitted and operational windfarms, in the surrounding area.

7.6.6 Conclusions:

Residual Effects: There will be some increase in noise, and/or dust emissions during the construction and operational phases, however predicted levels are within guidance limit values. Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative noise impacts during the operational phase when taken in combination with other windfarms, quarries, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered any of the written submissions made in relation to population and human health, in addition to any specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion: Having regard to all of the above, I am satisfied that the proposed development would not adversely affect population, human health, or air and climate, to any significant extent as a result of noise, shadow flicker, dust emissions or visual intrusion, subject to the full implementation of the mitigation measures and any recommended planning conditions. The proposed development would not give rise to any significant adverse cumulative impacts, in-combination with other windfarms, the grid connection route or plans and projects in the area.

7.7 Land, Soil & Geology

7.7.1 Project description

The proposed windfarm would comprise extensive excavation works associated with the construction of the 20 x turbines, substation, met mast, spoil depositories and associated infrastructure including underground cabling, access tracks and along the grid connection route within a rural area that is characterised by agricultural fields.

7.7.2 Locational context

The slightly elevated and moderately undulating site is underlain by glacial deposits over a bedrock of Visean Limestone. Parts of the S Cluster lie within the Killeglan Karst Landscape and close to the Castlesampson Esker, which are Areas of Geological Heritage of national importance. The site and environs may contain karst features (incl. dolines / depressions & limestone boulders), although some of the fields have been reclaimed and the strewn boulders removed. The site is not traversed by any drainage ditches or watercourses, and the lands drain to further afield surface level waterbodies via underlying groundwater flows. There is a large quarry in the S Cluster at Cam along the R363, and a small one in the N Cluster.

7.7.3 Environmental Impact Assessment Report

Chapter 8 of the EIAR and associated Technical Appendices deals with lands, soils and geology, and the Technical Appendices contain the results of several desktop studies (incl. GSI & EPA databases), walkover surveys and site-specific ground investigations (incl. geological logs, trial pits, boreholes, bedrock outcrops, Geophysical 2D resistivity profiles, seismic refraction profiles & soil tests), along with a Spoil Management report and a Construction and Environmental Management Plan (CEMP). ***Chapter 6 and 9*** deal with biodiversity, and hydrology and hydrogeology (incl. public & private water supplies, water quality & flood risk). Issues related to water and biodiversity will be assessed in sections 7.8, 7.9 & 7.10 below.

The EIAR described the ***ground conditions*** at the windfarm site as consisting of Limestone Tills soils over glacial deposits (incl. clay, sand & gravel) underlaid by a bedrock of Visean Limestone, with rocky outcrops. There are small areas of Fen peat to the NW of Dysert (outside the site) and isolated ribbons of esker deposits to the SE of the site. The topography of the ***N Cluster*** is undulating (c.70-105m OD), the soils are well drained and sub-soil depths mainly range from c.12.3 to 16.1m. The agricultural lands are characterised by improved grassland, scrub and boulders, with several low-lying turloughs (<65m OD). The topography of the ***S Cluster*** is more undulating (c.70-110m OD) with some locally steep hills and localised depressions (dolines). Soil conditions vary from well to poorly drained, and sub-soil depths mainly range from c.24.8m to 30m. The agricultural lands are characterised by improved grassland, scrub and glacially deposited boulders, with several low-lying turloughs. The EIAR described the ***ground conditions*** along the grid connection route (public road) as mainly flat consisting of a similar soil type and bedrock.

GSI mapping indicates that there are many ***karst features*** in the surrounding area which mainly comprise dolines or enclosed depressions (incl. turloughs) and strewn boulders). This includes c.30 dolines in the lowlands surrounding the N Cluster but none above 70mOD, and there are no recorded springs or swallow holes within the site. There are several dolines and turloughs mapped near the S Cluster in the lowlands to the N, and several enclosed depressions to the S along with swallow holes and springs. No significant areas of karstified bedrock were identified during the site investigations.

The EIAR states that the ***excavation works*** will give rise to c.126, 500m^3 of spoil material which would be controlled by way of a Spoil Management Plan. This would include c.40,700m^3 in the in the N Cluster and c.85,800m^3 in the S Cluster. A large proportion of spoil would be reused as fill material for turbine hardstands and internal access tracks, and for landscaping (c.59,600m^3), with the remainder stored in several spoil storage areas within the 2 x Clusters (c.66,900m^3).

The EIAR states that during the ***construction phase*** contamination of groundwater, bedrock and soils could arise from leakages, spillages and site clearance, but with no significant adverse impacts subject to mitigation measures (incl. bunded storage

of chemicals & fuels, storm drainage with oil interceptors; minimal refuelling, maintenance of plant & equipment; and an emergency plan & spill kits).

There are no ***slope stability*** or ***soil contamination*** concerns within the site or along the grid connection route. There would be a loss of c.29.8ha of ***agricultural lands*** from within the c.588ha site. Some 3.9ha of ***geological heritage*** feature would be lost from within the Killeglan Karst Landscape, along with a minor loss of esker deposits associated with an access track to the N of the Castlesampson Esker. No adverse impact was predicted for any ***designated sites*** (SACs, SPAs, NHAs or pNHAs) in the surrounding area as a result or the excavation work, subject to mitigation measures (incl. avoidance, buffer zones & sediment control).

The EIAR did not predict any significant adverse ***in-combination impacts*** during the operational or future decommissioning phases subject to the implementation of similar construction phase mitigation measure during decommissioning.

7.7.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above. In relation to the current County Roscommon Development Plan, the proposed S cluster would be partially located within the Killeglan Karst Landscape and to the N of the Castlesampson Esker, both of which are sites of national geological importance. Policies NH 10.11 and 12 seek to preserve and protect sites of county geological importance, and to promote and facilitate the development of geo-tourism.

7.7.5 Assessment

As previously stated, I surveyed the wind farm site and the surrounding area over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR studies which are summarised in section 7.7.3 above. I also had regard to the concerns raised by the Council, Prescribed Bodies (incl. GSI & NPWS) and the Observers which are summarised in section 4.0, and the applicant's response to these concerns in the Further Information and response submissions. Their concerns

related to: - potential adverse impacts on geo-heritage and karst landscapes; the loss of or damage to several karst features; under-recording of karst features; and groundwater / aquifer contamination. The County Council requested compliance with standard conditions and requirements. I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0. I note that the Board's previous reason for refusal of planning permission, as summarised in section 1.5 above, raised concerns in relation to the absence of adequate survey data required to assess potential adverse impacts on the surrounding turloughs, some of which are also QIs for several European sites.

The proposed windfarm would be located within a slightly elevated and moderately undulating rural area, and the receiving agricultural lands are mainly used for low intensity cattle and sheep grazing. The site elevations and slope gradients do not vary significantly across the site except for some localised slopes in the S Cluster. The substation and met mast would occupy relatively elevated positions whilst the access tracks would be located on moderately undulating terrain, and the grid connection would traverse a mainly flat area along the public road to the E. The area is characterised by mineral soils over glacial deposits which are underlain by Limestone bedrock. The site does not contain any significant peaty soils. The N and S Clusters are not traversed by any watercourses or drainage ditches and the lands drain to groundwater via the underlying sub-soils and bedrock. According to the GSI Landslide Susceptibility Maps, the risk of landslides is Low across the site and there are no recorded landslide events on the GSI online landslide event database.

An extensive range of site suitability tests were undertaken at the location of the various project elements. The turbines would occupy positions where the landslide susceptibility risk is low, sub-soil depths are substantial, underlying bedrock and glacial sub-soils are relatively firm, slope angles are low, and the aspect is mainly S facing. All these factors combined which would minimise the risk of instability and slippage within the site and surrounding lands. None of the turbines or supporting infrastructure would be located in areas there is a recent history of landslides or soil slippages. Site conditions and soil depths at the met mask, substation and access tracks were recorded as being similar to the overall site in both Clusters.

The proposed works would require the excavation and movement of substantial quantities of sub-soil and soil from across the site. It is estimated that a significant proportion would also be reused within the site during the construction phase at the turbine bases and access tracks, and for landscaping. The remaining unused spoil material would be stored in several spoil deposition areas in the N and S Clusters, mainly in the vicinity of the turbines. The unregulated excavation, movement and storage of spoil materials has the potential to affect soil hydrology, hydrogeology and drainage patterns in the area, and could give rise to groundwater contamination and changes to groundwater flow patterns, with resultant adverse impacts on the environment. These issues are addressed in more detail in section 7.8 below.

The suite of EIAR mitigation measures include detailed design and construction measures for all project elements across the entire site including general and site-specific mitigation measures, and proposals to manage spoil storage and reuse. The proposed arrangements are considered acceptable in terms of mitigating the risk of groundwater and soil contamination, and the release of sediments into groundwater and surrounding waterbodies (incl. turloughs, lakes & rivers). However, the mitigation measures should be applied at the preliminary design stage, detailed design stage and construction stage, and be subject to ongoing monitoring throughout the construction and operational phases.

The applicant carried out an extensive range of surveys and site suitability tests which were used to inform the location of the proposed turbines and associated infrastructure, and I am satisfied that the results of the various assessments are robust. The excavation works would have a permanent direct impact on agricultural land, soils and geology within the N and S Clusters. However, having regard to the scale and footprint of the proposed works (c.29.6ha) relative to the overall size of the site (c.588ha), I am satisfied that the proposed development would not have a significant adverse impact overall. This would be subject to the stringent implementation of EIAR mitigation measures and any recommended conditions, along with on-going site inspections and monitoring for the lifespan of the windfarm project.

The proposed development would be located on slightly elevated and moderately undulating land that is also characterised by small hills in the S Cluster, some of which are locally steep. The landslide susceptibility risk for the site and environs is low, and having regard to the mainly gentle slopes, the south facing aspect, the depth and density of the sub-soil overburden, and the absence of peaty soils, I do not consider that a stability risk assessment is required, and I am satisfied that the works would not give rise to an instability risk. The full implementation of construction phase mitigation measures at the turbine bases during the excavation works would minimise the risk of localised instability.

Notwithstanding this general conclusion, the works would also be located within a karst environment, and sections of the S Cluster overlap, or are close to 2 x geological heritage sites which have been described by the GSI as being unique and of national importance. Potential impacts on these features are assessed in more detail below.

Karst and esker features:

The surrounding area contains a variety of karst features (incl. dolines, enclosed depressions, caves/caverns, turloughs, swallow holes & springs), and the proposed excavation and site works have the potential to affect some of these features. The EIAR surveys concluded that a large proportion of the features comprise dolines, and to a lesser extent turloughs. Some of the turbines and access tracks would be located close these features, and it is possible that there may be further underlying caves and caverns that were not detected in the surveys, as noted by the GSI.

The GSI also raised concerns that the proposed development could result in a wide range of impacts on the karst environment, including: - removal and damage of limestone boulders and boulder strewn ribbed moraines; damage to underlying karst bedrock and features (incl. swallow holes, dolines & turloughs) and potential collapse of sinkholes; along with damage to intact esker and associated features (incl. fans & deltas). The GSI suggested a range of mitigation measures which would include: - siting turbines outside County Geological Site (CGS) boundaries, or close to perimeter; access tracks should avoid the Esker and wider haul routes should not

cross the CGS; smaller service roads should be kept to a minimum width and the 5m wide width of the internal roads should be reduced as they significantly exceed the width of the unpaved farm tracks.

Killeglan Karst Landscape (RO015):

As previously discussed in section 7.4.5 above, the S cluster of turbines would be located partially within the Killeglan Karst Landscape which is a geological and geo-heritage site of national importance, characterised by undulating hills and glacial moraines scattered with karstified limestone boulders and dolines (depressions). This karst landscape has been described as unique and the only one of its kind in Ireland by the GSI. Several of the Observers have also raised concerns about the visual impact of the proposed development on this karst landscape.

The Killeglan Karst Landscape comprises 3 x distinct sections to the E and W of the R357 road from Ballinasloe to Dysert / Thomas Street (SW, Mid & NE sections) and they extend from SW to NE across the landscape (Map attached). Two of the sections (Mid & NE) cover a portion of the lands within the S Cluster, and some of the 13 x turbines would be located either within or close to the Mid and NE Sections of the Karst Landscape. This Landscape extends to the W and E of the R357, and all sections read as a single landscape entity (albeit traversed by a regional road), and there are clear uninterrupted views of this landscape from along the R357 towards all sections of the Killeglan Karst Landscape (refer to s.7.4.5 above for a more detailed landscape & visual assessment).

I acknowledge the applicant's submission that the character of this landscape has been modified by agricultural practices in recent years, and that some of the turbines would be located on reclaimed land that is now devoid of the strewn limestone boulders that characterise the area. However, based on my examination of the site, I am satisfied that the Mid-Section of the Killeglan Karst Landscape, which is located in the SW section of the S Cluster, has not been altered to any significant extent and remains largely intact, whilst the NE-Section, which is located in the middle section of the S cluster, has been more noticeably altered by localised land reclamation.

Notwithstanding the localised modifications and having regard to the unique nature of the Killeglan Karst Landscape, and its integral relationship to the SW-Section which lies to the W of the regional road (R357), I remain concerned that the siting of some of the turbines in the S cluster would have a significant adverse impact on the character and integrity of the Killeglan Karst Landscape which is a geological heritage site of national importance. I also note that Policies NH 10.11 and 12 of the County Development Plan seek to preserve and protect sites of county geological importance, and to promote and facilitate the development of geo-tourism.

In the event that the Board is satisfied with all other aspects of the proposed development, I continue to recommend that the turbines located within the Killeglan Karst Landscape in the S cluster of the windfarm development be omitted by way of a planning condition (incl. T9, T10 & T12), in order to protect the unique geological heritage of the area.

Castlesampson Esker (RO010):

The southernmost section of the S Cluster partially overlaps with the tail end of the esker deposits associated with the Castlesampson Esker which is also a geological and geo-heritage site of national importance. The esker extends for c.6km along a SE to NW axis and the N tip of the esker is located within c.350m of one of the turbines (T17). I am satisfied that this is a sufficient distance to ensure its protection, however, the area around esker should be cordoned off for the duration of the construction works, and no storage of materials, plant or vehicles should be permitted in the vicinity. This could be addressed by way of a planning condition. One of the proposed access tracks would bisect two areas of esker deposit to the S of T17, and according to the EIAR, there is already a c.6m wide farm road in place which passes between these two deposits. However, the existing width of this farm road has been queried by the GSI and some of the Observers who have raised concerns that the road is narrower that stated and could be widened to achieve the 6m width. This concern could be addressed by way of a planning condition which prohibits any further widening of the farm road beyond its existing width, and the width of the internal roads and access tracks should be kept to a minimum and not significantly exceed the width of the existing unpaved farm tracks.

Other karst features:

I note that there may be other karst features located within the N and S Clusters that may be impacted by the proposed development. Although they are not covered by any sensitive geological heritage designations, care should be taken during the excavation works to ensure that they are not unduly damaged by the project.

Conclusion:

I am satisfied that the results of the various site investigations and assessments are robust. Although the excavations would have a permanent direct impact on land, soils and geology, on balance, the impacts on the environment would not be adverse, subject to the stringent implementation of EIAR mitigation measures (incl. on-going site inspections & monitoring) and the recommended conditions which seek to protect the character and integrity of geological features in the area.

Decommissioning Phase:

Less impacts on the environment anticipated than during the construction phase as only the turbines and related equipment would be removed, subject to a similar range of mitigation measures.

7.7.6 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of mitigation measures and recommended planning conditions, including the omission of turbines.

Cumulative Impacts: Any cumulative impacts during the construction and operational phases when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent.

Conclusion: I have considered any written submissions made in relation to land, soils and geology in addition to those specifically identified in this section of the report, and I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise, subject to the recommended omission of turbines.

Overall conclusion:

Having regard to all the above, I am satisfied that the proposed development would not have a significant adverse effect on land, soils, geology or give rise to a significant loss of geological heritage, subject to the full implementation of the mitigation measures and recommended conditions, including the recommended omission of turbines. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, the grid connection route, or plans and projects in the wider area.

7.8 Hydrogeology & hydrology

7.8.1 Project description

The proposed development would comprise the excavation works associated with the construction of 20 x turbines and associated infrastructure including temporary construction compounds, substation, met mast, access tracks, underground cabling and grid connection, along with minor road works along the haul routes. The underground grid connection would cross several watercourses to the E of the site.

7.8.2 Locational context

The windfarm site and environs are characterised by slightly elevated and moderately undulating agricultural lands that are underlain by glacial deposits over a bedrock of Visean Limestone. The N and S clusters are surrounded by turloughs, and the site and environs contain karst features (incl. dolines, springs & swallow holes). The River Suck is located c.3km to the W and Lough Ree and the River Shannon are located c.12km to the E. The site is not traversed by any watercourses or drainage ditches although there are several streams in the wider area. Surface water percolates to the underlying bedrock aquaifer via the glacial subsoil, and groundwater ultimately discharges to surface level waterbodies via underlying groundwater flows.

In relation to ***river basin districts***, the windfarm site and grid connection route are located within the Upper Shannon River Basin District. At regional level the lands are mainly located across the River Suck sub-catchment, with a small section of the S Cluster and the grid connection route contained within the Cross River sub-catchment. The slightly elevated and moderately undulating site is mainly characterised by medium to well drained agricultural soils that are underlain by deep layer of glacial sub-soil over a bedrock of Visean limestone. The underlying limestone bedrock is locally karstified.

In relation to ***surface waters***, the site is not traversed by any watercourses or drainage ditches, and the nearest rivers are the Ballyglass, Suck and Killeglan which

are mainly located to the W and SW of the windfarm site. The grid connection route would traverse several watercourses including the Cross River that ultimately discharges to the River Shannon to the E. The receiving watercourses are under pressure from several sources (incl. agricultural run-off). EPA River Water Quality status is described as varying between Moderate and mainly Good Status (Q3-4 & Q4) for the watercourses, whist Biological Water Quality status varies between Poor and Moderate Status.

The site overlies the ***Athlone West Groundwater Body*** (GWB) which is fed diffusely through percolation and at specific swallow hole points. The Suck-South GWB and Funshinagh GWB underlie the site and surrounding lands to the NW and NE of the site. The underlying groundwater body is classified as a Regionally Important Karstified Aquifer (conduit), and the vulnerability varies between High and Extreme. The WFD status for the ground waterbodies is classified as Good in terms of water quality. Groundwater movement generally reflects the topography of the area, and it mainly drains SW and W towards the River Suck and lesser tributaries (Ballyglass & Killeglan Rivers), although there are some small localised variations.

There are several ***turloughs*** in the surrounding area which are hydraulically connected to the underlying groundwater bodies, including the Suck-South GWB and Funshinagh GWB, and the River Suck, which is located c.3km to the W. The turloughs mainly occupy higher elevations in the N Cluster and lower elevations to the S Cluster (with a few exceptions), and the nearest turlough at Gortaphuill is located within c.50m of T4 the N Cluster and Cuileenirwan Lough is located to the E. Groundwater levels within the turloughs are usually high in the winter and low in the summer when many of the turloughs disappear, and several are also designated as National and European sites.

In relation to ***water supplies***, there are no mapped Group Water Schemes (GWS) within c.5km of the windfarm site or within 3km of the grid connection route. There are 2 x mapped Public Water Schemes (PWS) within c.6km of the site. The Killeglan PWS (Tobermore Spring source) is located c.1.9km from the S Cluster, and the Zone of Contribution (ZoC) for feeder springs partially overlaps this cluster. The Mount Talbot PWS is located c.5.8km NE of the N Cluster, although the boundary of

the Zone of Contribution (ZoC) is located c.2.8km to the N. There are several mapped wells close to the site, in the surrounding areas and along the grid connection route, along with rainwater harvester in the agricultural areas.

7.8.3 Environmental Impact Assessment Report

Chapters 6, 8 and 9 of the EIAR and associated Technical Appendices dealt with aquatic ecology, geology, hydrogeology, hydrology and water quality, and several desktop studies, field surveys and modelling exercises were undertaken. Chapter 8 of the EIAR dealt with geology, soils and land, which are assessed in section 7.7 above. Chapter 6 dealt with biodiversity and issues related to aquatic ecology will be assessed in sections 7.9 and 7.10 below.

The EIAR described the receiving environment (incl. topography, geology, soils, sub-soils, karst features, turloughs, rainfall data, ground water flows, drainage patterns, water quality & flood risks). It had regard to EPA and WFD water quality reports and studies, OPW Flood Maps and the GSI groundwater database. A range of desktop and field investigations and assessments were undertaken including: - hydrological walkover surveys, examination of local drainage patterns and conceptual hydrogeological modelling; biological and chemical surveys; turlough mapping; groundwater flow tracing and mapping; and public water supplies, abstraction points and wells. It also provided a Flood Risk Assessment, Drainage Plan, CEMP, and WFD Assessment report. It stated that ground water quality in the underlying aquifer was Good, receiving watercourses are of Moderate and Good Status (Q3-4 & Q4), and that the waterbodies support a variety of freshwater wildlife.

The EIAR concluded that there would be a temporary increase in surface water runoff during the construction phase with an imperceptible predicted increase over baseline conditions during the operational phase. No risk of down gradient flooding was predicted, including at the closest turbine to a turlough (T4 & Gortaphuill). It identified a potential risk of ground water pollution from suspended solids at site work locations (incl. turbine foundations, substation, access tracks, spoil depositories &

grid connection) and along sections of the grid connection route. Tracing tests at several springs were used to help map groundwater flow paths.
The EIAR proposed a range of mitigation, avoidance, inspection, and monitoring measures as part of a Construction and Environment Management Plan (CEMP), adherence to best practice and compliance with relevant Guidelines (incl. IFI). The main potential impacts and proposed mitigation measures in relation to the turbines, associated infrastructure, grid connection and delivery routes are summarised below.

- Avoidance
- Design (incl. interceptor drains, small working areas, flow limiters, attenuation ponds, sediment traps, settlement ponds & silt fences).
- Pre-emptive site drainage management (incl. seasonality, timing & weather dependency of works).
- Drainage Management Plan
- Identification and avoidance of karst features.
- No general dewatering below local ground water levels.
- No on-site maintenance of vehicles or plant.
- Bunded refuelling areas, emergency plan & spill kits.
- Self-contained staff sanitary facilities.
- Control of cement & concrete - no on-site batching.
- No in-stream works.

The EIAR concluded that, subject to the implementation of the mitigation measures, there would be no significant residual adverse impacts on water quality, groundwater flows, any public or private water supplies, group water schemes, wells or public abstraction points, aquatic ecology, or designated sites, and that the proposed development would not give rise to a downgradient flood risk, or at any of the project elements. It did not predict any significant adverse cumulative impacts during the operational or future decommissioning phase.

7.8.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above.

7.8.5 Assessment

As previously stated, I surveyed the wind farm site and the surrounding area over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR studies and field investigations which are summarised in section 7.8.3 above. I also had regard to the concerns raised by the County Council, Prescribed Bodies (incl. GSI) and the Observers which are summarised in section 4.0, and the applicant's response to these concerns in the Further Information and response submissions. Their concerns related to: - adverse impacts on ground water quality; underlying karst aquifer vulnerability; disturbance to ground water flows & hydraulic connectivity; proximity to Zone of Contribution for public water supply [Killeglan Springs]; flood risk close to turloughs; impacts on public and private water supplies [contamination & dewatering], and aquatic ecology. I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0. I note that the Board's previous reason for refusal of planning permission, as summarised in section 1.5 above, raised concerns in relation to the absence of adequate survey data required to assess the potential impacts on the interconnectivity of the surrounding turloughs, groundwater bodies and water quality.

Hydrology and hydrogeology:

The windfarm site is not traversed by any watercourses or drainage ditches, and surface water ultimately percolates to the underlying groundwater bodies which occupy the limestone bedrock via substantial layers of glacial sub-soils. The proposed turbines and associated windfarm infrastructure within the N and S Clusters would also be located a substantial distance from any surface level watercourses. The nearest watercourses are the Ballyglass and Killeglan rivers which ultimately discharge to the River Suck. There is however a strong inter-relationship between ground and surface waters within the site and surrounding karst environment. The site is underlaid by 2 x main Ground Water Bodies (Suck-South & Funshinagh) and it is hydraulically connected to several down gradient turloughs and surface level waterbodies (incl. Lough Funshininagh to the NE & the River Suck to the W), as described in section 7.8.2 above (Locational Context). The proposed grid connection route would traverse several small watercourses and drainage ditches to the E, including the River Cross which ultimately discharge to the River Shannon (E).

Potential adverse impacts:

The excavation of bedrock and large volumes of sub-soil for turbine foundations along with any resultant dewatering has the potential to adversely affect groundwater levels, flow patterns and recharge rates to the underlying groundwater bodies across the site and surrounding environs, and hence the quantity of ground water feeding into the interconnected network of downgradient turloughs and surface level waterbodies. The excavation and movement of large quantities of soil, sub-soil and spoil around the site, along with the removal of vegetation, has the potential to release fine sediments and nutrients into the underlying groundwater bodies, and hence adversely affect the quality of groundwater feeding into the network of downgradient ground and surface level waterbodies (incl. turloughs). Such uncontrolled events could also adversely impact the chemical balance and biological composition of the receiving downgradient ground and surface waters, with resultant adverse impacts on water supplies and drinking water quality (incl. abstraction points & wells), water quantity and quality, habitats and species.

Accidental fuel spillages from storage areas, machinery, vehicles, and directional drilling equipment have the potential to contaminate surface and groundwater. The underground cabling works for sections of the grid connection, and improvement works along the delivery route also have the potential to release sediments into nearby watercourses, which could affect water quality and cause disturbance to aquatic wildlife.

The potential impact of the proposed works on land, soils, geology, and site stability is dealt with in section 7.7 above and the potential impacts on aquatic ecology will be assessed in sections 7.9 below.

Groundwater:

In relation to groundwater quality, quantity***,*** and connectivity to several surrounding turloughs and further afield surface water bodies, I note that under the previous applications for windfarms at this location, the adequacy of the site surveys and investigations was a serious cause for concern (incl. sub-soil depth to bedrock; ground water flow patterns & connectivity to turloughs; site specific soil permeability

& resistivity; seasonal water level monitoring in groundwater, turloughs & wells; response to rainfall events & groundwater recharge). The applicant submits that this lacuna has been substantially addressed in the current EIAR by way of comprehensive site surveys and the analysis of both previous and current information and data which dates from c.2010 to 2021.

Having reviewed the EIAR, I would agree that a significant amount of site survey work and analysis has been undertaken for the proposed development (incl. 47 x boreholes [S], 22 boreholes [N], 112 x trial pits, 68 x dynamic probes, 45 x geophysical 2D resistivity profiles, 44 x seismic refraction profiles & 1D NASW survey at each turbine base, lab testing for particle size distribution x 82 & permeability x 12, and water level monitoring at wells, turloughs & rivers), along with desk top analysis of water balance to estimate ground water recharge levels. I also note that the applicant states that the windfarm layout would avoid locating turbines on or close to any known underlying karst features, and that excavations into bedrock would be largely avoided.

The applicant submits that there would be no resultant significant adverse impacts on groundwater levels, recharge rates to the underlying Ground Water Bodies (Suck-South & Funshinagh), hydraulic gradients, or groundwater flow paths towards the surrounding and downgradient turloughs or rivers, subject to the implementation of mitigation measures.

The proposed development would be located on slightly elevated and moderately undulating land that is characterised by small hills, particularly in the S Cluster where some of the hills are locally steep. I am satisfied that the works would not give rise to any landslide or instability concerns (Refer to section 7.7.5 for a more detailed assessment). The turbines in the N Cluster would be located at elevations of between c.72m OD (T4) and 91m OD (T1), and the turbines in the S Cluster would be located at elevations of between c.71.5m OD (T8 & T10) and 109m OD (T18), while the substation would be located at c.96m OD. The site investigations (incl. rotary core drilling, trial pits & borehole drilling) recorded a considerable variation of glacial sub-soil depths over the limestone bedrock across the entire windfarm site. The underburden depths in the N Cluster varied between c.1.3m and 16.3m with a

mean depth of c.7.41m, and between c.1.3m and c.30m in the S Cluster, with a mean depth of c.7.32m. The underlying bedrock was described as typically a strong, dark grey bioclastic Limestone with discrete weathered zones and intermittent clay infilled fractures, and no significant weathered karst features were identified during the site investigations. There were few water strikes, and where strikes did occur the aquifer was described as locally poorly productive, and groundwater levels within the 6 x monitoring wells took several weeks to rise to equilibrium groundwater level.

The EIAR test results indicate that groundwater levels in the N and S Clusters are significantly below the sub-soil levels, and hence the formation level for the turbine foundations. I note that only 2 of the 42 rotary core boreholes were logged with water strikes. All turbines in the S Cluster and most turbines in the N Cluster will be located above bedrock, and all of the turbines in both clusters will be located well above the recorded winter water table level. Although bedrock will be exposed at 3 x turbine locations in the N Cluster (T1, T5 & T6), and weathered bedrock will be exposed at a further 3 x turbine locations in the N and S Clusters (T7, T10 & T11), the foundations would be located well above water table levels, having regard to their positions within the undulating topography relative to recorded winter levels. This would support the applicant's contention that minimal bedrock excavation and hence dewatering will be required. I am therefore satisfied that there would be no significant adverse impacts on water quantity or interference with groundwater flows.

In relation to groundwater recharge, the EIAR desk top analysis of water balance estimated ground water recharge levels of between 80-100% by using Met Eireann long term rainfall and evaporation data and GSI recharge coefficient estimates, and that soils resistivity and percolation rates would be largely unaffected by the works. Having regard to these test results, and to the scale of the windfarm footprint (c.29.6ha) relative to the overall site area (c.588ha), I am satisfied that there would be no significant impacts on groundwater recharge from surface level rainwater to the underlying bedrock aquifer.

The GSI has classified the extensive underlying limestone bedrock as a Regionally Important Aquifer where the vulnerability varies between High and Extreme. The consultant hydrogeologist who advised the Board on the previous windfarm

applications described the underlying bedrock as extensively karstified (i.e. weathered or fissured), and referenced the inter-relationship between ground and surface waters. Several of the submissions raised concerns in relation to potential adverse impacts on groundwater and the underlying bedrock aquifer (incl. GSI, NPWS, RCC & several observers). On the other hand, the applicant has described the underlying limestone bedrock as not been highly karstified in both the previous and current windfarm applications. However, unlike the previous cases, the applicant's contention has been supported by an extensive range of site surveys and investigations to support the current application. The site investigations provide a very detailed, localised, and spatially specific description of the topography, sub-soil overburden, bedrock conditions and groundwater levels and flow patterns with the site, which I consider to be thorough and robust following my review of them.

I have had regard to the absence of any nearby watercourse, and to the substantial sub-soil depths and significant avoidance of bedrock, and to the layout and siting of the project elements, which would occupy elevated positions relative to bedrock and winter water table levels. I am satisfied that the proposed works would not have an adverse impact on groundwater recharge, groundwater flows, that subject to the stringent implementation of the EIAR mitigation measures, including ongoing inspections and monitoring, and adherence to relevant water quality and water protection requirements, in-combination with any recommended conditions for the construction and operational phases, the proposed works would not have a significant adverse impact ground or surface water quality. Bedrock excavation should be avoided as much as possible, and all works should take place well above the winter ground water table levels, the EIAR sediment control measures should be operational before construction works commence, and the entire works should be monitored by an on-site Hydrogeologist on a regular basis. These issues could be addressed by way planning conditions.

Turloughs:

There are several turloughs in the surrounding area which are hydraulically connected to the underlying groundwater bodies, which mainly comprise the Suck-South GWB (incl. Lough Croan, Four Roads, Feakle, Thomas Street & Gortaphuill

Turloughs), and Funshinagh GWB (incl. Feakle & Corkip Turloughs). All the turloughs are located between c.50m and c.3.0km of the nearest turbine, except Funshinagh which is located c.6km to the NE. The nearest turlough at Gortaphuill is located within c.50m of T4 the N Cluster with Cuileenirwan Lough to the E, and Feacle Turlough is located to the S of T18 the S Cluster.

The EIAR monitored winter water levels in the turloughs ranged from c.51.6m to 70.69m OD, the elevational differences between each turlough and the nearest turbine ranged from c.4.6m to 33m, and the head difference between the turloughs and the River Suck median water level ranges from c.7.7m to 26.7m. The turloughs close to the N Cluster mainly occupy higher elevations (incl. Croan, Commons, Gortaphuill, Cornalee & Funshinagh), and lower elevations close to the S Cluster (Incl. Feacle, Ballyglass & Corkip), although Thomas Street and Four Roads to the W of the N Cluster are also on lower elevations. Several of the turloughs are also designated as National and European sites for Turloughs and Waterbirds (incl. Corkip, Feacle, Four Roads, Croan & Funshinagh).

Groundwater levels within the turloughs are usually high in the winter and low in the summer when many of the turloughs disappear. However, Lough Funshinagh Turlough, c.6km to the NE of the N Cluster, which is a classified as a Vanishing Lake with “Turloughs” as a QI for the SAC, has not drained in several years and water levels have risen continuously over this time. The EIAR studies indicate that the River Suck, which is located c.3km to the W of the site, has a typical water level of c.40-42m OD while the turloughs surrounding the windfarm site are located at c.55-65m OD. I am satisfied that this indicates a fairly high hydraulic gradient over a short distance between the turloughs and the River Suck.

The EIAR plotted winter groundwater levels across the site and groundwater contours were derived from these levels. Groundwater flow is predicted to be perpendicular to groundwater contours, although with some localised topographical variations and the wider spread of groundwater levels across the site and environs.

The relationship between several of the proposed turbines and the surrounding turloughs and their catchments is described in the following table.

Turlough	Turbines	Turbine Direction	Cluster
Four Roads	T1 & T2	Within catchment	N
Gortaphuill	T4	Upgradient	N
Thomas Street	T3, T4, T5, T6 & T7	Downgradient	N
Feacle	T16, T17 & T18	Within catchment	S
Corkip Lough	T19 & T20	Upgradient	S

Any change in groundwater quantity (and recharge) or interference with groundwater flow patterns could potentially affect the quantity and supply of water to the surrounding turloughs which could, in turn, affect their integrity and render them unsustainable. Any resultant changes to water balance and quality within the turloughs could give rise to significant adverse impacts on water dependent species (incl. fringe vegetation, waterbirds & associated prey species). Refer to the Section 7.10 (Birds) and section 8.0 (Appropriate Assessment) for a more detailed analysis of potential adverse effects on waterbirds and European sites.

I have noted the GSI classification of the underlying bedrock as a Regionally Important Aquifer, and I have considered the concerns raised in the submissions, including about the complexity of groundwater movements within karst limestone and the interconnectivity between the site and the surrounding turloughs (incl. GSI, NPWS, RCC & several observers).

The extensive range of location specific site investigations and test results, as referenced above in the Groundwater section, indicate that minimal bedrock excavation and dewatering will be required, that the turbines will occupy elevated positions within the site, and that all works will take place well above the winter watertable level. I am satisfied that there will be no significant adverse impacts on the turloughs as a consequence of the proposed works, with no resultant changes to groundwater levels and recharge rates, or changes in groundwater flow paths towards the surrounding turloughs, or water quality within the turloughs. This would be subject to the strict implementation of mitigation measures (incl. avoidance, no bedrock / groundwater de-watering, surface water protection & sediment management measures) along with adherence to the measures contained in the CEMP the Drainage Management Plan. I am satisfied that the works would not have

an adverse impact on the quantity and/or quality of groundwater supplying the surrounding seasonal turloughs.

Public & private water supplies:

The SE section of the S Cluster would partly overlie the regionally important Killeglan Springs Source Protection Area that serves a public water supply scheme and the EIAR Tracer Studies (incl. dyes) identified a connection between Feacle Turlough and the Killeglan Springs. However, I note that there is only a slight overlap, and I am satisfied that the proposed development would not present a significant risk to water quality. This would be subject to the full implementation of the EIAR mitigation measures, and any recommended conditions, with no resultant adverse impacts on public water supplies anticipated. In relation to private wells and agricultural extraction points, the EIAR test results indicate that groundwater levels within the 6 x monitoring wells took several weeks to rise to equilibrium groundwater level. Depending on the time taken for the groundwater to recharge following the construction works and introduction of hard surfaces, and the time taken for rainwater to percolate through the glacial sub-soils, it is possible that water levels in some of the nearby private wells could be affected in the short term, however the long-term impact is not expected to be significant.

Water quality:

The EPA surface water quality status in the receiving waterbodies is described in section 7.8.2 above as varying between Moderate and mainly Good Status (Q3-4 & Q4). The vulnerability of the underlying groundwater aquifer varies between High and Extreme and the WFD status for the ground waterbodies is classified as Good in terms of water quality. As previously stated above, the unregulated removal of vegetation, movement of large quantities of soil and spoil, and site accidents have the potential to release fine sediments, nutrients and chemicals into ground and surface waterbodies. The EIAR proposes a comprehensive suite of mitigation measures to protect surface and ground water, including a Drainage Management Plan, to control and manage the release of fine sediments and hydrocarbons into surface and groundwater to prevent pollution of underlying groundwater and downstream water bodies (incl. turloughs).

These measures are summarised in section 7.8.3 above they mainly include layout and design features, and a series of avoidance measures as part of a Construction Environmental Management Plan (incl. surface water management), along with ongoing site inspections, water quality monitoring and strict adherence to all relevant water quality protection requirements. Any outstanding concerns in relation to the management of ground and surface water and related site matters could be addressed in the final CEMP, and by compliance with normal council requirements for the management of surface water run-off and water quality. I am satisfied that the extensive suite of mitigation measures, combined with the Drainage Management Plan, compliance with Council requirements and any recommended conditions, would ensure that water quality would not be adversely affected to any significant extent with no resultant impacts on surface and groundwater WFD status anticipated.

Flood events:

The OPW's river and coastal flood maps indicate that there have been no recorded flood incidents within the windfarm site, and PFRA mapping indicates that there are no 100-year fluvial flood zones mapped within the site. There have been several recurring incidents in the vicinity which relate to the surrounding low-lying turloughs (incl. Thomas Street, Feacle, Corkip & Croan), and watercourses (Ballyglass River), The Thomas Street Turlough at the nearby Dysert Village floods every 2-3 years with resultant impacts on the adjacent R357. However, most of the turbines and associated infrastructure would be located at a distance from the turloughs, significantly above the winter water table levels in the underlying bedrock, and well above the recorded winter levels in the flood catchments of the surrounding turloughs.

I note that T4 in the N Cluster would be located within 50m of the flood extent catchment of Gortaphuill Turlough. However, the site-specific FRA results conclude that T4 would not be affected by rising winter water levels at Gortaphuill Turlough, having regard to the difference between the turbine and turlough site levels, the position of T4 relative to underlying water table levels, and the recorded winter flood extent of this turlough. This relationship would be similar for Cuileenirwan Lough to the E. I am satisfied that the construction works, along with the introduction of

impermeable hard surfaces would not have an adverse impact on water quality and quantity within these turloughs, subject to the implementation of the water quality protection measures contained in the Drainage Management Plan, and compliance with a condition which prohibits bedrock excavations close to the winter water table.

Grid connection:

The proposed underground ***grid connection*** would traverse several small watercourses by way of HDD, and the proposed works would not present a significant risk to ground or surface water quality and aquatic ecology, subject to the full implementation of the EIAR mitigation measures, and any recommended conditions. There have been no recorded flood incidents along the grid connection route (R363) although there have been fluvial flood levels along the Cross River which would be traversed by the route, to the far N and S of this road.

Conclusions:

Having regard to the foregoing, I am satisfied that the proposed construction and operational phases would not have an adverse impact on groundwater quality and quantity, groundwater recharge, groundwater flow patterns or hydraulic connectivity to surrounding waterbodies (incl. seasonal turloughs), or any public or private water supplies in the wider area (incl. ground water abstraction points or wells). This would be subject to the stringent implementation of the EIAR mitigation measures and any recommended conditions, during the construction and operation phases of the project, and adherence to EU and national standards to protect water quality.

Decommissioning Phase:

Less impacts on the environment anticipated than during the construction phases as only the turbines and related equipment would be removed, subject to a similar range of mitigation measures in relation to the protection of surface and ground water quality.

Cumulative impacts:

Having regard to all of the above, and the rural nature of the surrounding area which is not characterised by a high density of development, and to the separation distance between any existing or proposed windfarms or large-scale projects, I am satisfied

that the proposed development would not give rise to any significant adverse cumulative impacts in-combination with other plans or projects in the wider area (incl. the nearby Cam quarry along the R363).

7.8.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of the EIAR mitigation measures and recommended conditions.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, quarries, plans and projects in the surrounding area would be minimal in extent, having regard to the conclusion of no significant impacts with respect to the project.

Conclusion: I have considered all the written submissions made in relation to water, hydrology and hydrogeology, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise, subject to the implementation of the EIAR mitigation measures and recommended conditions.

7.9 Biodiversity (excl. birds)

7.9.1 Project description

The proposed development would comprise construction works associated with 20 x turbines and associated infrastructure including temporary construction compounds, substation, met mast, access tracks, spoil depositories and underground cabling, along with minor road works along the delivery and haul routes.

7.9.2 Locational context

As previously stated, the windfarm site occupies a slightly elevated and moderately undulating location, and there are several protected European and National sites in the surrounding area. The site and environs are not traversed by any drainage ditches or watercourses and the lands drain underground to further afield surface level waterbodies (incl. turloughs, lakes & rivers) via the underlying groundwater. The windfarm site is mainly characterised by low intensity farmland (incl. cattle & sheep grazing) and the field network is defined by mature hedgerows and stone walls. The grid connection to the existing 110kV Monksland substation would be mainly located under and along the verges of public road and it would traverse several small watercourses. Other protected and/or sensitive sites in the wider area include rivers, turloughs, lakes and bogs, and it is possible that mobile species from further afield sensitive sites visit, and/or fly over the windfarm site and environs.

7.9.3 Environmental Impact Assessment Report

Chapters 6 and 9 of the EIAR, associated Technical Appendices dealt with Biodiversity and water quality within the windfarm site and environs, and along the grid connection and delivery routes. Desktop studies, walkover surveys and field investigations were undertaken and used to inform the conclusions of the EIAR and NIS. The EIAR identified sensitive sites located within the Zone of Influence of the site (SACs, SPAs & p/NHAs). It mapped habitats, identified plant species and conducted field surveys for mammals and invertebrates (incl. terrestrial & aquatic) within the site and environs, and along the grid connection and haul routes. It identified the main potential impacts as habitat loss and degradation (mainly improved agricultural grassland, dry calcareous & neutral grassland, and

hedgerows), disturbance to various plant and animal species during construction, disturbance to bats and birds, including collisions with turbines when operational. It proposed several mitigation measures (incl. avoidance, buffer zones, seasonality & timing of works, and pre-construction surveys) along with a Biodiversity Mitigation and Enhancement Plan. The EIAR concluded that there would be no adverse residual or cumulative impacts post mitigation. The EIAR Appendices contains the results of several ecological surveys (incl. habitats, vegetation, mammals, birds & invertebrates).

Designated sites: the windfarm site and environs are located within low intensity agricultural lands which are not within a European or National site. There are several designated sites in the wider area which have the potential to be affected by the works (incl. turloughs, lakes & rivers) that the project has the potential to affect.

Habitats: the site and environs are mainly occupied by improved agricultural grassland habitats (incl. Annex 1 Priority Grassland), hedgerows, stone walls and turloughs (incl. Gortaphuill & Feacle), along with improved agricultural grassland and amenity grassland along the grid connection, delivery and haul routes. The Biodiversity Mitigation and Enhancement Plan (BMEP) would provide for the restoration and enhancement of Annex 1 Grassland habitats whereby c.2.7ha of lost habitat would be replaced by c.9-12ha of enhanced habitat, and c.2.53km of lost hedgerow habitat would be replaced by c.2.82km of new habitat. The underground grid connection route would traverse several watercourses (Eroding upland rivers).

Flora: no protected plant species were recorded within the footprint of the project, although the areas covered by unmanaged Dry calcareous and neutral grassland habitat contain a diverse range of plants (incl. several Orchid species).

Fungi: a diverse range of species were recorded within the 2 x Clusters.

Bats: desktop and field surveys were carried out around the site and along the grid connection route, and no suitable roosting or nesting habitat was identified within 1km of the N and S Clusters. Bat surveys included roost surveys, manual transect surveys, ground level static and height surveys, which included seasonal dusk and dawn investigations. Several species of foraging and commuting bats were recorded

present along linear features (incl. hedgerows & stone walls) within a c.10km radius of the two clusters (incl. Soprano & Common pipistrelles and Leisler's bats).

***Badgers*:** two outlier setts within the study area boundary were recorded, and pre-construction surveys will be undertaken with appropriate mitigation designed to avoid undue disturbance to this species.

Otter: none recorded on site, although their presence, along with suitable commuting and forging habitat was recorded along some of the water courses traversed by the grid connection (incl. Cross River).

***Other mammals*:** the surveys recorded the presence of several species within the 2 x clusters and surrounding area (incl. Irish hare & Fox).

***Invertebrates*:** the desktop surveys noted the presence of Marsh fritillary in the wider area, and Targeted Surveys for adults and Larval Web Surveys were undertaken in areas of suitable habitat (incl. Devil's Bit Scabious), however this species was not recorded present within the 2 x clusters. A diverse range of other un-protected invertebrate species were recorded within the clusters (incl. spiders, butterflies, moths, bees, damselflies, craneflies & grasshoppers).

Reptiles & amphibians: Common frog was recorded in the survey area, and Common lizard and Smooth newt are likely to occur.

Fisheries & aquatic fauna: Water quality at sampled locations was Q3 (moderately polluted). Watercourses have potential to support several fish & aquatic species and field surveys were undertaken for fish (incl. electro-fishing) and White-tailed crayfish (sweep netting) along with macrophyte and aquatic bryophyte surveys. Three of the watercourses were evaluated as of high value local importance including Barr's Drain (Lamprey), Cross River (Lamprey, Brown trout, Stone loach & Floating river vegetation), and Ballyglass River (Lamprey).

Invasive species: no Third Schedule species recorded.

Key Ecological Receptors (KERs)

The EIAR identified the following key sites, habitats & species: -

- Designated sites (SACs, SPAs & p/NHAs.)
- Eroding / upland rivers
- Turloughs
- Dry calcareous & neutral grasslands
- Hedgerows & Stonewalls
- Badger, Otter & Bats
- Fisheries & Aquatic Fauna

EIAR Conclusions:

The EIAR identified potential impacts during the construction and operational phases (incl. habitat & species loss, fragmentation, degradation & disturbance), and it concluded that there would be no significant adverse residual impacts on any designated sites, habitats or species. This would be subject to the implementation of mitigation measures, pre-construction surveys, seasonal works, no in-stream works, avoidance measures around construction sites and operational turbines, and habitat restoration and replacement (BMEP). The EIAR concluded that there would be no adverse cumulative impacts in-combination with other plans or projects in the wider area, or any additional adverse impacts during the decommissioning phase.

7.9.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above. The National Biodiversity Action Plan, 2022 sets out a range of actions to achieve Ireland's 'Vision for Biodiversity', with the overriding objective of achieving no net less in biodiversity. Several sites in the surrounding area have been designated as being of National and European importance (incl. SACs, SPAs & p/NHAs). The Development Plan contains several policies and objectives for the protection, management and enhancement of protected site, habitats and species.

7.9.5 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area, and the wider road network over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR environmental and ecological studies which are summarised in section 7.9.3 above and to the concerns raised by the Council, Prescribed Bodies (incl. NPWS & GSI) and several of the Observers which are summarised in sections 4.0 above. Their concerns related to: - potential adverse impacts on protected sites, habitats and species (incl. Annex 1 & Priority habitat); inadequate EIAR (incl. survey data, cumulative impacts, mitigation & alternatives); EIAR inaccuracies & omissions (incl. turloughs); adverse impacts on biodiversity (incl. grasslands, wetlands & watercourses), karst features (incl. caves, dolines & caverns), species (incl. bats, butterflies & orchids); and inadequate assessment of inter-connectivity between landscapes, habitats and species. I had regard to the Applicants' response to these concerns which is also summarised above. I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0. I note that the Board's previous reason for refusal of permission, as summarised in section 1.5 above, raised concerns in relation to the absence of adequate survey data required to assess potential impacts on the interconnectivity of the surrounding turloughs and their relationship with waterbirds, some of which are QIs and SCIs for European sites.

The windfarm site is not located within a designated European site although there are c.18 SACs and SPAs, and several p/NHAs within a c.15km radius of the project, and there is an aquatic connection to some of these sites via groundwater flows, and watercourses along the grid connection route.

The proposed windfarm would be mainly located within low intensity improved agricultural lands which contain several areas of Annex 1 Priority Grassland and constituent floral species (incl. Orchids). The lands, which are mainly used for cattle and sheep grazing, are defined by mature hedgerows and stone walls. The site is underlain by limestone bedrock which comprises several karst features (incl. dolines, caves, caverns & boulders) which drain surface water from the land to groundwater and ultimately further afield surface waterbodies.

The windfarm site and environs are used by several species of mammal (incl. Badger, Otter, Fox & Irish hare) and there is evidence of an outlier badger sett. The linear hedgerows and stone walls have commuting and foraging potential for several species of bat (incl. Soprano & Common pipistrelles and Leisler's bats), and the proposed works could result in disturbance, displacement, fatalities, barotrauma and loss of support habitat. The site contains pockets of support habitat for Marsh fritillary (incl. Devil's bit scabious), which is a protected invertebrate species, and desk top studies indicate that it may be present nearby.

The underground grid connection route along the public road verge, would traverse 6 x small watercourses (Eroding / upland rivers), three of which contain support habitat for fish (incl. Atlantic salmon, Lamprey, Brown trout & Stone loach). The proposed development, in the absence of mitigation, has the potential to affect sensitive habitats and species as the excavation and construction work could result in the loss or degradation of habitats, and the loss of or disturbance to species (incl. fatalities).

The potential impacts on birds will be assessed in section 7.10 below and issues related to European sites will be addressed in Section 8.0 (Appropriate Assessment).

Natural Heritage Areas (NHAs):

The proposed development would not be located within a designated NHA or a proposed NHA, although the River Suck Callows NHA is located c.3km to the W of the site. There are four nearby p/NHAs at Lough Croan and Four Roads Turloughs to the N and NW of the N Cluster, and Feacle Turlough and Castlesampson Esker to the SE of the S Cluster. There are also several further afield NHAs and p/NHAs which are designated for Turloughs and Bogs (c.15km radius), including Lough Funshinagh Turlough c.5km to the NE of the N Cluster.

The proposed works have the potential to affect water quality in these NHA and p/NHA sites because of the nature of the underlying karst geology and groundwater flow characteristics, which may provide a hydraulic connection between the windfarm clusters and the designated sites. Potential effects could also result from surface water runoff along the grid connection route. The EIAR surveys and analysis concluded that there may be a ground water connection between the windfarm

clusters and several of the NHA and p/NHA sites and that further consideration was required. However, it excluded the nearby Lough Croan Turlough, Castlesampson Esker and Lough Funshinagh Turlough from being within the Likely Zone of Impact because of the absence of a hydraulic connection, due to distance, gradient or intervening topography.

Potential impacts on water quality and groundwater flows, before and after mitigation, are assessed in more detail in section 7.8 above. However, have regard to the duration of the main construction works (c.18 months) and subject to the implementation of the mitigation measures, including post construction site management and monitoring, and the separation distances between the works (incl. turbines & access tracks) and most of the NHA and p/NHA sites, I am satisfied that the proposed development would not have a significant adverse impact on water quality within or groundwater flows to these sites. Refer section 7.10 below for a more detailed assessment of turlough interconnectivity and waterbirds.

Habitats and flora:

The ***windfarm site*** is located within a karst environment that is mainly characterised by undulating agricultural fields in the N Cluster, and boulder strewn agricultural fields in the S Cluster. The lands are mainly occupied by improved agricultural grassland habitats (incl. Annex 1 / Priority Grassland), hedgerows and stone walls, and there are several nearby turloughs. The proposed vegetation clearance, excavation and construction work have the potential to adversely affect several habitats and species (incl. habitat loss & fragmentation; species loss; changes to hydrology & groundwater conditions; and water quality) in the absence of mitigation.

Most of the affected habitats and floral species would be permanently lost or fragmented due to hard infrastructure, and buffers around the turbine and substation. Operational phase maintenance could give rise to habitat disturbance. This would include the loss of Annex 1 / Priority Grassland habitats (c.2.7ha) and hedgerows (c.2.53km) which will be addressed in more detail below. Notwithstanding the scale of habitat loss, I am satisfied that most of the impacts would not be significantly adverse, subject to the implementation of mitigation measures (incl. avoidance,

restoration & replacement), and any additional measures outlined in sections 7.7 and 7.8 above in relation to soil stability, erosion control and water management. In the long term, it is also possible that the habitats could be further restored in the future after decommissioning.

The habitats along the ***grid connection and haul routes***, mainly comprise improved agricultural grassland, hedgerows, amenity grassland and several small watercourses (incl. Eroding upland rivers). Most of these habitats are of moderate local value, and their loss would not have a significant adverse impact on biodiversity. The proposed works also have the potential to adversely affect the surrounding environment and any ***further afield sensitive habitats*** by way of disturbance to soil morphology and hydrology. However, I am satisfied the impacts would not be significantly adverse, subject to the implementation of the mitigation measures outlined above and in sections 7.7 and 7.8 in relation to soil and water management.

Turloughs:

This Priority habitat is of National Importance. There are several located within a 50m to 15km radius of the proposed development which could potentially be affected by the proposed works (incl. water quality & quanity, ground water flows & birds). Refer to section 7.8.5 above and section 7.10.5 below for a more detailed assessment of potential impacts on turloughs and their interconnectivity with the surrounding area. Some of the turloughs are not covered by any of the sensitive heritage designations outlined above. This includes Gortaphuill Turlough which is located close to the NE corner of the N Cluster and Cuileenirwan Lough to the E, and other small turloughs on the periphery of the S Cluster. I note that T4 would be located within c.50m of Gortaphuill Turlough, and that Cuileenirwan Lough is also located nearby. The proposed turbines and associated infrastructure would occupy elevated positions relative to winter water levels in the underlying bedrock, and relative to the winter flood extent of the surrounding and further afield turloughs. In relation to T4, the site-specific FRA concluded that this turbine and its associated infrastructure would not have a significant adverse impact on the Gortaphuill Turlough habitat or in turn be adversely affected by its fluctuating water levels.

Having regard to the difference in site levels between the turbine locations and the turloughs, the substantial subsoil depth to bedrock, and the position of the turbine foundations well above winter watertable levels in the underlying bedrock and outside of the winter flood catchment of the turlough, I am satisfied that the project elements (incl. T4) would not have an adverse impact on water quality and quantity at any nearby or further afield turloughs (incl. Gortaphuill Turlough). This would be subject to the stringent implementation of the water quality protection measures contained in the Drainage Management Plan, and compliance with a condition which prohibits bedrock excavations close to the winter water table level.

Dry calcareous and neutral grassland:

The Killeglan Karst Grassland SAC is located close to the S Cluster on the W side of the R357, and it has been designated for one QI habitat (Semi-natural dry grasslands and scrubland facies on calcareous substrates [Festuco-Brometalia] [* important orchid sites]). The windfarm site contains a similar range of Annex 1 Grassland habitats which are of National Importance (Semi-natural dry grasslands [Festuco Brometalia] & Semi-natural dry grasslands and scrubland facies on calcareous substrates [Festuco Brometalia] [*important orchid sites]). The Dry calcareous grassland habitat is particularly species rich and of high biodiversity value (incl. several Orchid species) and may be of International Importance and a Priority habitat, depending on species diversity and the variety of Orchid species present.

There are several pockets of these Annex 1 Grassland habitats within the windfarm site, and particularly in the S Cluster, although some of them have been degraded by agricultural activity and may be in poor condition. Some of the habitats in the S Cluster would be directly affected by the proposed works (incl. habitat loss & fragmentation) in sections where the turbines and associated infrastructure are located (incl. in the vicinity of T9, T10 & T12) which have been recommended for omission), and this also includes areas of Orchid Rich Calcareous Grassland in the central section of the S Cluster. Some of the Annex 1 habitats could also be indirectly affected by the works as several turbines and/or their access tracks would be located in close proximity to them.

EIAR Table 6-14 indicates that there is c.144.6ha of Annex 1 Grassland habitat within the EIAR boundary of which c.2.7ha would be lost (c.1.9%). The loss of Annex 1 habitats is estimated as Moderate having regard to the small percentage loss and is reflected in the overall layout which sought to avoid species rich areas.

The EIAR mitigation measures for Annex 1 habitats close to the footprint of the development seek to minimise and contain impacts by: - roping off work areas; no storage of material within or shortcuts through Annex 1 areas; and storage and reuse of topsoil. The EIAR mitigation measures for Annex 1 habitats within the footprint of the development would also provide for the restoration and enhancement of Annex 1 Grassland habitats, whereby c.2.7ha of lost habitat would be replaced by c.9-12ha of enhanced habitat. This would be managed by a Biodiversity Mitigation and Enhancement Plan (BMEP) which includes a Farm Plan for each of the landowners. Areas of improved or semi-improved grassland would be allowed to revert back to vegetation communities similar to those occurring within adjacent Annex 1 Grassland habitats. This would be achieved by way of a mandatory agreement whereby the landowners would sign up to key undertakings (incl. no further land reclamation, spreading of manure or herbicides, or reseeding with perennial rye grass).

The BMEP proposes 4 x options for the achievement of restored and enhanced habitats which range from c.8.94 to c.11.16ha.

- ***Option 1*** would provide 3 x areas in the SW section of the S Cluster (A, B & C) which provided a combined area of c.10.76ha.
- ***Option 2*** would provide 3 x areas in the central section of the S Cluster (D, E & F) which provided a combined area of c.8.94ha.
- ***Option 3*** would provide 2 x areas in the N & S Cluster (E & H) which provided a combined area of c.10.8ha.
- ***Option 4*** would provide 1 x area in the central section of the S Cluster (G) which provided a combined area of c.11.16ha.

Based on my site assessment and examination of the aerial maps (incl. BMEP Figures 2-1, 2-2 & 2-3), it appears that some of these areas have already been reclaimed and the limestone boulders removed, including the areas located within sections of the Killeglan Karst Landscape. Although the undertaking not to spread manure or herbicides would make a positive contribution to the rewilding of these areas, given the absence of limestone boulders and rocky outcrops, which are an intrinsic feature of this landscape and habitat, I have some concerns that a like-for-like habitat could ultimately be achieved under all scenarios across the entirety of the enhanced habitat. As noted below in relation to Flora, in order to improve the establishment of new habitats for Orchids (and related species) the hydrology of the area must be just right, and that it may not be, given the extent of reclamation that has already occurred in some of the areas. Notwithstanding this concern and taking into account of the private ownership of the lands and having regard to the substantial spatial extent of the of the areas to be "rewilded" relative to the small areas that would be lost, I am satisfied that there would be an overall net gain in biodiversity. This would be in line with the objectives of the National Biodiversity Strategy, 2022. However, the Board may wish to attach a planning condition which requires compliance with BMEP and associated Farm Plan.

Hedgerows & Stonewalls: These habitats are of Local Importance. Although the stone walls would be largely retained, the proposed hedgerow removal (c.2.53km) would represent a significant biodiversity loss. However, the lost linear habitat would be replaced and replanted (c.2.82km), which would result in a minor net gain of c.300m, in accordance with the Biodiversity Mitigation and Enhancement Plan (BMEP). Although there would be no significant long term adverse impacts, a planning condition should require the use of local indigenous hedgerow species, and on-going monitoring to ensure that the replacement hedgerows mature to a satisfactory level.

Other habitats: There is a myriad of forestry, agricultural and amenity grassland habitats located within the environs of the windfarm site, and along the grid connection and haul routes which would be marginally affected by the proposed works. However, having regard to the low conservation value of these habitats, I am

satisfied that there would not be any significant loss of or damage to any other habitats, subject to the implementation of mitigation measures and adherence to best construction practices.

Flora:

A single Autumn lady's tresses orchid was recorded within c.60m of the access track between T9 and T12, and c.110m from the base of T9. I note that this plant species does not usually flower every year and that specimens do not necessarily appear above ground each year, hence it is therefore possible that more of this species is present within the site than recorded in the field survey. In order to conserve this species and improve the establishment of new habitats the hydrology must be just right (not too dry & not too moist). A pre-construction survey should be carried out before works commence, in the event that this or any other protected species are identified a 5m buffer should be erected around it for the duration of the works. In relation to the proposed grid connection works, Floating River vegetation, which is a QI species for downstream SACs, is present in some of the watercourses traversed by the grid connection, however no in-stream works are proposed, and no adverse impacts are anticipated.

Mammals:

***Bats*:** The NPWS and several of the Observers raised concerns about potential adverse impacts on Bats, and the NPWS noted that this species is increasingly impacted by windfarms (incl. collisions & barotrauma) and that karst landscapes are often important to them for roosting (incl. caves & caverns). They also raised concerns about: - the quality of the survey information (incl. absence of some karst features); inadequate seasonal bat surveys undertaken during various weather conditions, particularly for migrating bats (incl. Nathusius' pipistrelle); and that further assessment is required for migrating, high-flying and far-flying species (incl. Leisler's bat). The Applicant's response to these concerns confirmed that the site was fully surveyed and appraised for suitable Bat habitat in line with SNH (NS) guidelines and that replacement hedgerow planting will ensure linear connectivity for foraging and commuting bats, post construction.

The proposed windfarm would undoubtedly cause a temporary disturbance to various bat species (incl. Soprano, Common & Nathusius pipistrelles, and Leisler's bats) during the ***construction phase***. No roost or nursery sites were recorded in the vicinity of the site, except for a derelict farm building that would not be affected by the works. However, a pre-construction survey should be undertaken to minimise disturbance at this roost. The EIAR surveys did not record any subsurface activity in the underlying karst features (incl. caves & caverns), and no adverse impacts on breeding populations are anticipated. Most of the bat species that frequent the site and environs utilise the extensive network of hedgerows and stone walls which provide optimal linear commuting and foraging opportunities. Although the stone walls would be largely retained, the proposed hedgerow removal (c.2.53km) and general construction works have the potential to adversely affect, disturb, interrupt and displace commuting and foraging bats in the absence of mitigation. However, the lost hedgerow habitat would be replaced by new replanted habitat (c.2.82km), which would result in a minor net gain of c.300m. I am satisfied that there would be no significant adverse impacts on bats as a consequence of the construction phase works in the long term. However, a planning condition should require the use of local indigenous hedgerow species, and on-going monitoring to ensure that the replacement hedgerows mature to a satisfactory level.

During the ***operational phase*** the turbines could give rise to a collision risk and barotrauma in bats. The Bat Report contained in EIAR Appendix 6.2 carried out a Collision Risk Assessment for 4 x high risk species (Common, Soprano & Nathusius pipistrelle, and Leisler's bat) which are present in low to medium numbers around the site based on the survey results and prevailing weather conditions. The risk of collision was calculated as Medium with no significant adverse impacts at local level. The collision risk for the remaining bat species was considered to be low with no significant impacts anticipated (incl. Brown long-eared bats & Myotis spp.).

The main ***mitigation measures*** comprise the provision of 50m buffer zones from blade tip to the nearest hedgerow around all turbines, and these vegetation free zones would deter foraging activity in the vicinity due to the resultant absence of prey species. Other measures proposed to lessen bat fatalities (EIAR Appendix 6.2) include pitching the blades out of the wind (Blade Feathering) which can reduce

fatality rates by up to 50% according to SNH (NS). However, it is noted that Leisler's bat is less habitat dependent than the other species as it favours aerial hawking and is therefore at a higher risk of collision with turbines. The proposed Bat Mitigation and Monitoring Plan would provide for Curtailment (between mid-April to mid-October), if required, between sunset and sunrise, at certain windspeeds and temperatures. Pre-construction bat surveys and post construction monitoring should also be required by way of a planning condition. Having regard to the main mitigation measures and recommended conditions (incl. buffer zones, blade feathering, curtailment, surveys & monitoring), I am satisfied that the risk of collision and/or barotrauma for bats would not be significant during the operational phase.

There would be little or no ***artificial lighting*** at night during the operational phase, except for aviation lights which research to date concludes would not be problematic for foraging bats. I am satisfied that bats would gradually habituate to the windfarm with no significant adverse long-term impacts anticipated.

The ***grid connection*** would traverse several watercourses by way of HDD with minimal disturbance anticipated. Although the EIAR Bat Report concluded that the various bridges along the route offered little roosting potential for bats, a pre-construction bridge survey should be undertaken. Any recorded species should be removed way of an NPWS Licence and humanely relocated to a suitable similar environment. This could be addressed by way of a planning condition.

Badgers: two outlier setts and associated entrances were identified within the EIAR study area, and it is possible that foraging activity occurs within the site. It is proposed to undertake pre-construction surveys which would be used to inform appropriate mitigation measures so as to avoid undue disturbance to this species. Potential adverse impacts on this species include the destruction of all or part of the sett, construction phase disturbance especially during the breeding season which could lead to the abandonment of the sett, accidents and mortality, and the loss of foraging habitat within the group's territory, in the absence of mitigation. However, in the absence of any specific mitigation details, I consider that buffers should be provided around and known and newly recorded Badger setts and entrances. This could be addressed by way of a planning condition would require: - avoidance of

setts; pre-construction surveys; monitoring hedgerow and shrub clearance; exclusion zones around sett entrances (30m) with security fencing and scrub retention within these zones; undertaking works outside the breeding season, but if required then no works within 50m of the sett for general construction and 150m for noisy and vibratory activities; built-in construction design should allow for escape from trenches; and NPWS Derogation Licences as required. I am satisfied that this range of measures would protect Badgers, their main sett and nearby foraging territory from any significant adverse impacts.

Otter: It is unlikely that Otter commutes across the windfarm site due to the absence of on-site drainage ditches or watercourses, and there is no physical evidence that it uses the site as commuting route. No significant adverse impacts are anticipated for Otter in terms of loss of foraging grounds or prey species. However, there is evidence that Otter may forage and commute along some of the watercourses traversed by the grid connection route, and one of these watercourses (River Cross) ultimately discharges to the River Shannon Callows SAC to the SE. Given that Otter is a Qualifying Interest species for this SAC, it is possible that the grid connection works could cause a temporary short-term disturbance to this species. However, the proposed avoidance of in-stream works would ensure that there would be no localised diminution of water quality or resultant loss of prey species. I am satisfied that that the presence of Otter in the vicinity of the grid connection works would not justify a reason to refuse permission for the project, however, a pre-construction Otter survey should be carried along the watercourses out before works commence.

Other mammals: The works would give rise to disturbance and displacement during the construction phase, however there would be no significant loss of foraging grounds and affected mammal species (incl. Irish hare & Fox) would gradually habituate to the windfarm after the works are completed.

Amphibians & reptiles:

Except for Common frog, the desk top studies and field surveys did not record any evidence of amphibian or reptilian species within the site, although it is possible that some reptilian species frequent the area including along the forestry tracks (incl.

Common lizard & Smooth newt). However, I am satisfied that the proposed development would not have a significant adverse impact on any of these species.

Fisheries & aquatic species:

There is evidence that several species of fish in their various life cycle stages (incl. Atlantic salmon, Lamprey, Brown trout & Stone loach) may be present in some of the watercourses traversed by the grid connection route, including Barr's Drain, Cross River and Ballyglass River. One of these watercourses ultimately discharges to the River Shannon Callows SAC to the SE (Cross River). It is possible that the grid connection works could cause a temporary short-term disturbance to fish species. However, the proposed avoidance of in-stream works would ensure that there would be no localised diminution of water quality or resultant loss of nursery habitat, spawning grounds or prey species. The presence of fish in the vicinity of the grid connection works would not justify a reason to refuse permission for the project, however the works should avoid the fish breeding season. Although it is possible that the watercourses may provide support habitat for White-clawed crayfish, none were identified in the surveys, and the Q3 moderately polluted status of some of the watercourses renders them less than optimal for this species.

Invertebrates:

No rare or protected invertebrates were recorded within the site or immediate environs during the field surveys. Although the desk top studies record the nearby presence of Marsh fritillary, and the field surveys recorded the presence of supporting habitat (incl. Devils bit scabious) no adult specimens or larval webs were recorded during the surveys. I am satisfied that the proposed development would not have an adverse impact on this protected species. Although several other species of invertebrates were recorded present on the site, no other rare or protected invertebrates or suitable support habitat was recorded during the desktop or field surveys.

Bird species:

Potential impacts are assessed in section 7.10 below.

Invasive species:

Invasive plant species were not recorded present with the site and environs, although they may occur along the grid connection and haul routes and in the wider area. Appropriate measures should be put in place to prevent the introduction or spread of such species during the construction phase, and an Invasive Species Management Plan should be required as part of the final CEMP.

Decommissioning Phase

Less impacts on the environment and biodiversity anticipated than during the construction phase, subject to the implementation of a similar range of mitigation measures in relation to noise, and the protection of habitats and species.

7.9.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions (incl. the omission of turbines in the S Cluster), and most species disturbed during construction will return and gradually habituate to the operational windfarm.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, quarries, plans and projects in the surrounding area would be minimal in extent, having regard to the finding of not significant adverse impacts at project level.

Conclusion: I have considered any written submissions made in relation to biodiversity including sensitive habitats and protected species, included those of the NPWS, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise, subject to the implementation of the recommended conditions related to the omission of turbines in the S Cluster.

Overall conclusion:

Having regard to the foregoing, I am satisfied that the proposed development, including the windfarm, infrastructure works, and grid connection and haul routes, would not have any significant, adverse, long term residual impacts on any sensitive

sites, habitats, flora or fauna in the area, subject to the full implementation of the EIAR mitigation measures, any recommended conditions (incl. the omission of turbines in the S Cluster), and adherence to guidance and best construction practice. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, grid connections, plans or projects in the wider area.

7.10 Biodiversity (incl. Birds)

7.10.1 Project description:

The proposed development would comprise the excavation and construction work associated with the erection and operation of 20 x turbines, and associated infrastructure including a met mast, substation, spoil depositories, and underground cabling, along with minor road works along the delivery route.

7.10.2 Locational context

As previously stated, the site occupies a slightly elevated and moderately undulating location, and there are several designated National and European sites in the wider area. The windfarm site and environs are mainly characterised by low intensity agricultural fields that are defined by hedgerows and stonewalls. The surrounding lands slope down gently from N to S, with a series of hills in the S Cluster, and the site is not traversed by any watercourses or drainage ditches. The lands drain to the underlying groundwater body and hence to further afield waterbodies located mainly to the W and SW of the site which in turn ultimately discharge to the River Suck c.3km to the W of the windfarm site. There are several turloughs surrounding the N and S Clusters, some of which are designated European sites for a variety of bird species, as are Lough Ree and the River Shannon, c.11km to the E of the site. The underground grid connection to the existing 110kV Monkstown substation to the E would be mainly located along the public road which crosses several small watercourses. Other protected and/or sensitive sites in the wider area include turloughs, lakes, rivers and bogs, and it is possible that mobile species from further afield sensitive sites visit the site and environs (incl. several species of bird).

7.10.3 Environmental Impact Assessment Report

Chapters 6, 7 and 9 of the EIAR and associated Technical Appendices dealt with biodiversity, birds and water within the windfarm site, its environs and the wider area. Chapter 7 identified the main potential impacts on birds as habitat loss, disturbance,

displacement, barrier effects and collision risk. Several desktop studies, walkover surveys and detailed seasonal field surveys (incl. Vantage Point, Transect & Hinterland surveys) were undertaken over various seasons for 3 x years and targeted species surveys (Valued Ornithological Receptors [VORs]) and Collision Risk assessments were undertaken. Breeding status was determined for several species (incl. Waders & Raptors), as was feeding distribution (Swan & Goose), roosts (GWFG), nocturnal foraging (Golden plover) and flight activity (incl. Whooper swan, GWF Goose, Wigeon, Golden plover, Lapwing & Black-headed gull). Several designated National and European sites in the wider area were identified (c.15km based on core foraging distances). The EIAR also was supplemented by additional survey data submitted by the applicant and provided by the DAU (NPWS).

The EIAR identified 10 x Primary Target species (Breeding & Non-breeding) and c.8 x Secondary Target species including Raptors, Waterbirds Golden plover and Northern lapwing. Several ***Primary Target species*** registered relatively high numbers in and around the N and S clusters (incl. Whooper Swan, GWF Goose, Wigeon, Golden plover, Lapwing, Black-headed gull & Curlew). Curlew was only recorded over the S Cluster where higher numbers of Wigeon and Lapwing were also recorded, with higher numbers of Golden plover over the N Cluster. Bird counts were low for raptors in the N and S clusters (Hen harrier, Peregrine falcon & Kestrel). All recorded ***Secondary Target species*** registered a low bird count except for Common raven at both the N and S clusters.

In terms of ***breeding birds*** within the 2km buffer, no Breeding Waders were recorded in either cluster except for one possible breeding Snipe territory in the S Cluster, 2 x probable Buzzard territories to the N and NW of the N Cluster, and 1 x Peregrine falcon breeding site in the wider area. In terms of ***feeding birds*** (Swans & Geese) within the 1km buffer, the surveys observed WS and GWF geese feeding mainly outside the N and S Clusters in the vicinity of Lough Croan (N) and Ballyglass River (S). Feeding observations include c.154 WS to the E of the N Cluster and outside the 1km survey buffer, and c.126 to the NW and SE of the S Cluster and within the 1km survey buffer (2018/9). No GWF geese were recorded feeding within 1km or flying over the N and S Clusters during the surveys. In terms of ***roosting birds*** (GWFG) within the 1km buffer, the surveys observed several flocks of varying sizes (c. 9 to 267) at Lough Croan to the N of the N Cluster. In terms of ***nocturnal***

foraging, several small flocks of Golden plover were observed in the N Cluster. In terms of ***importance***, several species recorded present within the EIAR study area are Qualifying Interests at some of the surrounding European sites (incl. GWFG, WS, Black-headed gull, Wigeon, Golden plover & Lapwing), and some of the European site populations are of International Importance and National Importance (WS & GWFG).

The EIAR stated that although there would be ***Habitat loss*** within the site during the construction phase (c.29.6ha of mainly agricultural land), the overall impact on foraging, nesting or breeding birds would be minimal having regard to the lack of suitable habitat within the N and S Clusters for most species. It stated that there would be no habitat loss or knock-on adverse effects at the surrounding turlough habitats during any of the phases in relation to impacts on water quality and quantity. There was some potential for ***Disturbance or Displacement*** effects during the construction phase which would be managed by the mitigation measures contained in the Construction and Environmental Management Plan. ***Collision Risk*** Modelling (Appendix 7.7) was undertaken for target species (VORs) identified in the bird surveys (incl. Whooper swan, Greenland white-fronted goose, Eurasian wigeon, Pergrine falcon, Kestrel, European golden plover, Northern lapwing, Eurasian Curlew & Black headed gull). It concluded that the risk of collision with turbines was negligible for all recorded species (this conclusion was not significantly altered after a re-run of the models following the submission of additional survey data). It also considered ***in-combination*** effects and it identified several sensitive sites, plans, projects and windfarms within a c.20km radius of the site (incl. nearby Cam Quarry). It concluded that the project would not have a significant adverse effect on resident, wintering or migratory birds or contribute to ***a barrier effect*** or resultant loss of energy as the area is not regularly used as a migratory corridor by sentive target species.

EIAR Mitigation measures: The EIAR did not predict any adverse residual or in-combination impacts subject to the implementation of mitigation measures related to avoidance by design; management of construction and future decommissioning stages; seasonality and timing of works; buffer zones (c.300m to 750m - species dependent); avoidance of bird breeding seasons; pre-construction bird surveys

(breeding & nesting); appointment of a Projects Ecologist; and post construction and operational monitoring (incl. carcass counts).

EIAR conclusion: The EIAR concluded that there would be disturbance during the construction phase, some habitat loss and temporary species displacement, but that the birds would gradually habituate to the operational windfarm post construction. The farmland site does not contain optimal foraging or nesting habitat for the target species (VORs). The operational phase collision risk and mortality rate is low for all species, with no displacement or barrier effects predicted. It did not predict any adverse impacts for birds which frequent or traverse the windfarm site and the surrounding area, across the seasons.

7.10.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above.

7.10.5 Assessment

As previously stated, I surveyed the wind farm site and the surrounding area over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR biodiversity, ornithology and hydrology / hydrogeology studies which are summarised in sections 7.8.3, 7.9.3 and 7.10.3 above. I also had regard to the concerns raised by the Council, Prescribed Bodies (incl. NPWS) and the several of the Observers which are also summarised above. The concerns raised related to the inter-connectivity between the windfarm site, the surrounding waterbodies (incl. Turloughs) and several species of bird, potential adverse impacts on sensitive sites (Incl. p/NHAs, SACs & SPAs) and their qualifying bird species, and disturbance to several other non-SCI/QI bird species which frequent the site and environs (incl. raptors & waterbirds). Concerns were also raised in relation to the quality and accuracy of the survey data and resultant EIAR conclusions. I then had regard to the applicant's response to these concerns which included additional bird surveys which were undertaken by the applicant, and the DAU(NPWS) survey data for 3 x species (WS, GWFG & BHG), which recorded a steady decline in bird population numbers over this timeframe in the surrounding area, but higher activity at some surrounding waterbodies than recorded in the applicant's surveys (incl. Lough

Croan). I also had regard to relevant national, regional and local planning policy, which is summarised in section 3.0. I note that the Board's previous reason for refusal of permission, as summarised in section 1.5 above, raised concerns in relation to the absence of adequate survey data required to assess potential impacts on the interconnectivity of the surrounding turloughs and their relationship with waterbirds, including those that are QIs and SCIs for European sites.

The potential impact of the proposed works on hydrology and hydrogeology, and aquatic and terrestrial ecology (excl. birds) have been assessed in sections 7.8 and 7.9 above. Issues related to European sites will be addressed in Section 8.0 (Appropriate Assessment).

The windfarm site is not located within any designated National or European sites however there are several p/NHAs, SACs and SPAs in the surrounding area, which are designated for a variety of sensitive species including resident, breeding, migratory, water and wintering birds. The River Suck Callows, Lough Ree, Middle Shannon Callows, Lough Croan and Four Roads Turlough SPAs, are variously designated for several species which have been recorded at, near or over the N and S Clusters, as summarised in the following table.

	Distance to site boundary	**Whooper Swan**	**GWF Goose**	**B- H Gull**	**Golden plover**	**Lapwing**	**Wigeon**	**Wetland & Waterbirds**
Lough Croan	*1km N*	No	**Yes**	No	**Yes**	No	No	**Yes**
Four Roads Turlough	*2km NW*	No	**Yes**	No	**Yes**	No	No	**Yes**
River Suck Callows	*3km W*	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**
Lough Ree	*12km E*	**Yes**	No	No	**Yes**	No	**Yes**	**Yes**
Middle Shannon Callows	*13km SE*	**Yes**	No	**Yes**	**Yes**	No	**Yes**	**Yes**
Core foraging distance		***5km***	***5-8km***	***5-300km*** ***18.5km (breed)***	***3-11km***	***3-11km***	***3-11km***	***Various***

There are several further afield sensitive sites within a wider radius of the site which are also designated for their importance to birds, and there are several other non-designated sites and waterbodies in the vicinity which may have an inter-connection with the site and environs (incl. Turloughs).

The proposed underground grid connection along the public road network would cross several small watercourses, none of which are designated. Having regard to the scale and nature of this element of the proposed works, and subject to the implementation of the EIAR water quality protection measures, I am satisfied that the grid connection works will not have any adverse impacts on birds.

The EIAR carried out extensive seasonal bird surveys over a c.3-year period which concluded that the mainly agricultural site does not offer optimal conditions for many foraging and ground nesting birds. Several key species were recorded in the vicinity of the site and environs which were designated as target species (VORs) although not all of them are qualifying species (SCIs) for the surrounding European sites (incl. Peregrine falcon, Kestrel, Whooper swan, Greenland white-fronted goose, Wigeon, Golden plover, Lapwing, Curlew & Black-headed gull). The results are summarised in section 7.10.3 above and I am satisfied that the EIAR survey effort substantially accords with SNH/NS Guidance. I am also satisfied that the applicant took account of the additional survey data provided by DAU/NPWS in relation to the assessments.

The proposed development has the potential to affect bird species during the construction, operational and future decommissioning phases. Construction and decommissioning works could result in the loss of, damage to, or fragmentation of support habitats (incl. Turloughs), damage to nests, and general disturbance. The operational windfarm has the potential to affect bird mortality rates for several species as a result of colliding with turbine rotor blades and possibly give rise to displacement. It also has the potential to act in-combination with other windfarms in the wider area to create a barrier effect for foraging and commuting species. Any resultant displacement and/or barrier effects could have secondary adverse impacts on the storage of energy reserves for migratory species (incl. wintering waterbirds).

Raptors:

The EIAR surveys and several of the Observers noted raptor activity along with a small number of flights over the survey area by Kestrel, Peregrine falcon, Buzzard, Sparrowhawk and Hen harrier. Although occasional foraging activity (and a possible HH nest & White-tailed sea eagle flight as per an Observer observation) was noted in the wider area, there is limited nesting potential within the N and S Clusters because of the agricultural use of the area, and the absence of suitable cliff habitat for Peregrine falcon, and tree cover / open heathland for Hen harrier. Although the surveys recorded a single intermittently occupied Peregrine falcon nest site within c. 580m and c.700m of two of the proposed turbine locations, there was no record any other raptor breeding activity or nests within or close to the site. Given the low level of nesting activity, I am satisfied that the proposed works are unlikely to result in any species displacement.

The EIAR mitigation measures provide for pre-construction and operational phase surveys. Hedgerow clearance should be avoided during the bird breeding season. The temporary cessation of work should be required if an active Peregrine falcon, Hen harrier or Kestrel nest is discovered and a species appropriate 500m to 700m buffer around any identified nests should be provided. On-going monitoring should continue during and after construction. These measures could be required by way of a planning condition.

Collision Risk Modelling was carried out for Peregrine Falcon and Kestrel but not for Hen harrier and Buzzard as no flights were recorded at an equivalent collision risk height. Collision Risk Modelling over a 30-year period for Peregrine falcon (non-breeding) based on the survey results and an avoidance rate of 98%, predicted a collision rate of 0.017 per year and 0.51 over 30 years. This equates to c.1 collision every 60 years, which is not considered to be significant at local or regional level. Collision Risks for Kestrel (breeding), based on the survey results and an avoidance rate of 95%, was predicted to be 0.637 per year which equates to c.19 over 30 years or 1 collision every 18 months, which is not considered to be significant at regional level, although it could have an affect at local level.

Having regard to the low numbers of raptors recorded at, on and flying over the site and environs, along with the dispersed layout of the turbines taken in combination

with the small scale of the existing permitted and operation turbines within a c.20km radius of the site, I am satisfied that the proposed mitigation measures would ensure that the proposed development would not have any adverse effects on raptor species at the site or the wider area. No significant adverse long-term impacts are anticipated in terms of habitat loss, displacement, collision risk, mortality or barrier effects, and raptor species would gradually habituate to the area post construction.

Wetland and Waterbirds

There are several European and nationally sensitive waterbodies in the wider area (c.15km) which are designated for their conservation importance for resident, wintering and migratory wetland and waterbirds (incl. Whopper swan, Greenland white fronted goose, Black-backed gull, Widgeon, Curlew, Golden plover, Lapwing & Widgeon). There are several other designated and non-designated sites in the surrounding area which are also frequented by wetland and waterbirds. The N and S Clusters do not provide suitable nesting or roosting opportunities for most waterbird species given their low intensity agricultural use, except for Golden plover and Lapwing which have been recorded in varying numbers at each of the clusters. However, it is likely that some species also use the site to rest and/or forage, and that several species fly over the windfarm site and environs enroute between the various surrounding waterbodies. The EIAR field surveys, DAU (NPWS) survey data, and Observer submissions confirm that many of the surrounding turloughs are regularly frequented by wetland and waterbirds. The proposed development has the potential to adversely affect several species by way of: - general disturbance, loss of foraging, resting and nesting places; damage to support habitat (incl. turlough connectivity); collision risk resulting in fatalities; and barrier effects and displacement resulting in reduced energy reserves.

General disturbance, loss of foraging, resting and nesting places:

The windfarm site is characterised by low intensity agricultural lands which are mainly used for cattle and sheep grazing, and the fields are defined by stone walls and hedgerows. The less undulating N Cluster slopes down from N to S whilst the S Cluster is hilly and rugged, with strewn boulders and shrub in the SW section which overlaps with the Killeglan Karst Landscape. The N and S Clusters, which comprise a variety of grassland habitats, are not traversed by any watercourses or drainage

ditches. The overall site is surrounded by a network of waterbodies (incl. rivers, lakes & turloughs) in the wider area that are frequented by several species of wetland and waterbird, some of which fly over the site between the waterbodies, and some utilise the lands for foraging, resting and ground nesting (incl. Curlew, Snipe, Golden plover & Lapwing).

The proposed excavation and construction works would undoubtedly cause a disturbance to the bird species that regularly utilize the lands, however the impacts would be short term and most species would eventually habituate to the presence of the operational turbines post construction (Collision Risk is assessed in more detail below). Pre-construction surveys would be undertaken and species specific disturbance free buffer zones would be installed around any record nest sites. Although there would be a permanent loss of foraging, resting and nesting opportunities, the overall scale of the loss (c.29.6ha) would be minor relative to the size of the site (c.588ha.).

The EIAR proposes to replace lost hedgerows and calcareous grasslands which would result in a net overall habitat gain in the long term. The recommended omission of turbines from within the Killeglan Karst Landscape section of the S Cluster would also have a positive impact for biodiversity and birds. However, vegetation clearance and hedgerow removal should take place outside the bird breeding seasons, and pre-construction surveys should be undertaken to ensure that the fledglings have left their nests.

Turlough connectivity:

The proposed development has the potential to adversely affect the quality and quantity of groundwater feeding into the surrounding turloughs that several species of waterbird frequent, during all phases. The potential impacts of the proposed works on geology, soils, hydrology, hydrogeology, water quality, recharge rates, drainage, groundwater flow patterns, water quantity in turloughs and the interconnectivity of waterbodies (including rivers & turloughs) have been assessed in sections 7.7 and 7.8 above.

Given the mainly substantial depth of the glacial subsoils relative to the underlying bedrock, along with the proposed location of the turbines at elevated positions relative to recorded underlying winter watertable levels and water levels in the River Suck, and to the flood extent of the winter catchments of the surrounding turloughs, and to the scale of the proposed turbine foundation works which will mainly avoid excavation into bedrock, I am satisfied that the proposed development would not have an adverse impact on the surrounding waterbodies (incl. Turloughs). This would be subject to the stringent implementation of the EIAR mitigation measures to protect surface and ground water quality (incl. Drainage Management Plan), and ground water quantity and flow patterns, along with compliance with recommended planning conditions to prohibit bedrock excavations close to winter watertable levels.

I am therefore satisfied that the proposed development would not have a consequential adverse impact on the species of waterbird (incl. GWFG) that frequent the surrounding turloughs in terms of a loss of or damage to support habitat. Although there could be some general disturbance at nearby turloughs (incl. Lough Croan) during the construction phase of the development, I am satisfied that the waterbirds will gradually habituate to the presence of the windfarm on the N and S Clusters and continue to frequent the surrounding turloughs which would not be negatively impacted in terms of water quality and quantity.

Collision Risk impacts:

*Greenland White-fronted Goose**:*** was observed during the surveys of the site and environs. Flight activity over the N and S Clusters was recorded as relatively low, and there was no evidence that it visits the N or S clusters on a regular basis. GWFG is a qualifying species for the nearby River Suck Callows SPA and for some of the surrounding designated and non-designated waterbodies, including Lough Croan SPA, and Four Roads and Feacle Turloughs. It may also forage in the surrounding grasslands. I note that the DAU (NPWS) describe it as a high collision risk species, and the additional survey data provided by the DAU (NPWS) recorded significantly higher bird counts at the surrounding waterbodies than the EIAR surveys, and particularly at Lough Croan to the N. It is likely that this GWFG flies over the windfarm site enroute between the various waterbodies that lie within its 5km to 8km

core foraging range (as per SNH/NS Guidelines). Collision Risk Modelling, based on flight survey results and an avoidance rate of 99.8% predicted a collision rate of 0.054 per year, which equates to 1.62 over 30 years, and 1 collision every 18 to 19 years. The scale of predicted collision risk and resultant fatalities would not have an adverse impact on GWFG populations at local, regional, national or international level, relative to available population data (incl. I-WeBS, BTO Birdfacts & DAU survey data), and taking account of the core foraging range for this species. There was no significant change to the EIAR assessments following the receipt of additional survey data by the DAU (NPWS), which contained higher bird counts over a longer survey period. Although there would be more fatalities relative to the higher numbers, the proportion of the population affected would be largely unaltered under the various scenarios. Potential effects of the proposed development on European sites and their SCI species are addressed in Section 8.0 of this report (Appropriate Assessment).

Whooper swan: was observed during the surveys of the site and environs, and flight activity over the N and S Clusters was recorded as relatively low. WS is a qualifying species for the nearby River Suck Callows SPA and the further afield Lough Ree and Middle Shannon Callows SPAs and it frequents the surrounding non-designated waterbodies, including Thomas Street and Feacle Turloughs. It may also forage the surrounding grasslands. I note that the DAU (NPWS) refers to the presence of a national and international WS population within County Roscommon and in particular at Lough Ree to the E, that the River Shannon Callows and River Suck Callows are listed in the top four sites for this species, and that WS feed at and fly over the windfarm site to a greater extent than recorded by the applicant. I also note that the additional survey data provided by the DAU (NPWS) recorded higher bird counts at the surrounding waterbodies than the EIAR surveys. It is likely that WS flies over the windfarm site enroute between the various waterbodies that lie within its up to 5km core foraging range (as per SNH/NS Guidelines), which would exclude Lough Ree and River Shannon Callows which are well beyond this range. Collision Risk Modelling, based on flight survey results and an avoidance rate of 99.5% predicted a combined collision rate of 0.228 per year for both Clusters, which equates to 6.84 over 30 years, and 1 collision every 4 to 5 years. The scale of predicted collision risk and resultant fatalities would not have an adverse impact on WS populations at local,

regional, national or international level, relative to available population data (incl. I-WeBS, BTO Birdfacts & DAU survey data), and taking account of the core foraging range for this species. There was a slight decrease in predicted Collision Rates, but no significant change after the models were re-run to take account of the additional non-breeding season survey data provided by the applicant. There was no significant change to the EIAR assessments following the receipt of additional survey data by the DAU (NPWS), which contained higher bird counts over a longer survey period. Although there would be more fatalities relative to the higher numbers, the proportion of the population affected would be largely unaltered under all scenarios. Potential effects of the proposed development on European sites and their SCI species are addressed in Section 8.0 of this report (Appropriate Assessment).

Black-headed gull: was recorded during the surveys of the site and environs. Flight activity was mainly concentrated around Thomas Street Turlough (and the surrounding flooded fields) to the SW of the N Cluster, and Feacle Turlough to the SE of the S Cluster. It may also forage on the surrounding grasslands. BHG is not a qualifying species for any of the nearby European sites although it is for the further afield Middle Shannon Callows SPA to the E. I note that the DAU (NPWS) refers to the presence of an internationally important BHG breeding population at Lough Ree and the River Shannon Callows, and that the maximum foraging range during the breeding season is 18.5km. It is therefore possible that BHG flies over the windfarm site enroute between the waterbodies that lie within its 5-300km core foraging range (as per SNH/NS Guidelines) and core breeding season foraging range of 18.5km (as per DAU/NPWS submission). I note that the additional survey data provided by the DAU (NPWS) recorded higher bird counts at the surrounding waterbodies than the EIAR surveys. Collision Risk Modelling, based on flight survey results and an avoidance rate of 98% predicted a collision rate of 0.697 per year, which equates to 21.9 over 30 years, and just under 1 collision every year. The scale of predicted collision risk and resultant fatalities would not have an adverse impact on BHG populations at local, regional, national or international level, relative to available population data (incl. I-WeBS, BTO Birdfacts & DAU survey data). There was an noticeable increase the predicted Collision Risks for the N and S Clusters to just under 2 and 3 collisions per year for each cluster, after the models were re-run to take account of the additional non-breeding season survey data provided by the

applicant. There was no significant change to the EIAR assessments following the receipt of additional survey data by the DAU (NPWS), which contained higher bird counts over a longer survey period. Although there would be more fatalities relative to the higher bird counts, the proportion of the population affected would be largely unaltered under all scenarios. Potential effects of the proposed development on European sites and their SCI species are addressed in Section 8.0 of this report (Appropriate Assessment).

Golden plover: was recorded during the surveys of the site and environs. There is evidence that it visits and flies over the N cluster more so than the S Cluster having regard to the varying site conditions, including rugged terrain in parts of the S Cluster. (I note the dearth of EIAR nocturnal surveys relative to daytime surveys in the S Cluster for health and safety reasons related to the rugged terrain, and I accept this explanation). GP is a qualifying species for the River Suck Callows SPA and nearby Lough Croan and Four Roads Turlough SPAs, as well as the further afield Lough Ree and Middle Shannon Callows SPAs. It also frequents some of the surrounding non-designated waterbodies, including Thomas Street and Feacle Turloughs, and it may also utilize the surrounding grasslands. It is likely that GP forages within the windfarm site and environs, and flies over it enroute between the various waterbodies that lie within its 3km (breeding) to 11km (maximum) core foraging range (as per SNH/NS Guidelines). Collision Risk Modelling, based on flight survey results and an avoidance rate of 98% predicted a collision rate of 0.432 per year, which equates to 12.96 over 30 years, or 1 collision every 2 to 3 years. The scale of predicted collision risk and resultant fatalities would not have an adverse impact on GP populations at local, regional or national level, relative to available population data (incl. I-WeBS & BTO Birdfacts), and taking account of the core foraging range for this species. There was a slight increase in the predicted Collision Rates to just over 1 collision per year, but no significant change after the models were re-run to take account of the additional non-breeding season survey data provided by the applicant. Potential effects of the proposed development on European sites and their SCI species are addressed in Section 8.0 of this report (Appropriate Assessment).

Northern lapwing: was recorded during the surveys of the site and environs, and there is evidence that it visits and flies over the S cluster more so than the N Cluster. NL a qualifying species for the nearby River Suck Callows SPA and it frequents some of the surrounding designated and non-designated waterbodies, including Feacle Turlough to the SE, and it may also utilize the surrounding grasslands. It is likely that NL flies over the windfarm site enroute between the various designated and non-designated waterbodies that lie within its 3km (breeding) to 11km (maximum) core foraging range. Collision Risk Modelling for the N Cluster, based on flight survey results and an avoidance rate of 98% predicted a collision rate of 0.160 per year, which equates to 4.8 over 30 years, or 1 collision every 6 to 7 years. Collision Risk Modelling for the S Cluster predicted a collision rate of 1.509 per year, which equates to 45 over 30 years, or 1.5 collisions every year. The combined Collision Rate for the N and S Clusters was predicted as 1.66 per year (non-breeding season) and 0.855 (breeding season). The scale of predicted collision risk and resultant fatalities would not have an adverse impact on NL populations at local, regional or national level, relative to available population data (incl. I-WeBS, BTO Birdfacts & DAU survey data), and taking account of the core foraging range for this species. There was a slight decrease in the predicted Collision Risk for the S Cluster to just over 1 collision per year, after the models were re-run to take account of the additional non-breeding survey data provided by the applicant. Potential effects of the proposed development on European sites and their SCI species are addressed in Section 8.0 of this report (Appropriate Assessment).

Eurasian wigeon: was recorded during the surveys of the site and environs. There is evidence that it flies over the S cluster more so than the N Cluster, where flight activity was mainly concentrated around Feacle Turlough. EW is a qualifying species for the nearby River Suck Callows SPA and the further afield Lough Ree and River Shannon Callows SPAs, and it is known to frequent some of the surrounding designated and non-designated waterbodies, including Feacle Turlough. It may also forage on the surrounding grasslands. It is likely that EW flies over the windfarm site enroute between the waterbodies that lie within its c.3km core foraging range. Collision Risk Modelling, based on flight survey results and an avoidance rate of 98% predicted a collision rate of 0.794 per year, which equates to c.24 over 30 years, and just under 1 collision year. The scale of predicted collision risk and

resultant fatalities would not have an adverse impact on EW populations at local, regional or national level, relative to available population data (incl. I-WeBS, BTO Birdfacts & DAU survey data), and taking account of the core foraging range for this species. There was a slight increase in the predicted combined Collision Rates for the N and S Clusters, but no significant change after the models were re-run to take account of the applicant's additional non-breeding season survey data.

Eurasian Curlew: was recorded during the surveys of the site and environs, and there is evidence that it flies over the S cluster more so than the N Cluster, where flight activity was mainly concentrated around Feacle Turlough. EC is not a qualifying species for any designated European sites within a c.15km radius of the windfarm, however it is known to frequent some of the surrounding designated and non-designated waterbodies, including River Suck Callows, Feacle Turlough and the Southern Roscommon Lakes. I note that the DAU (NPWS) refers to the presence of an important breeding population of EC at Lough Ree. It is likely that EC flies over the windfarm site enroute between the waterbodies that lie within its 1-2 km core foraging range (as per SNH/NS Guidelines). Collision Risk Modelling, based on flight survey results and an avoidance rate of 98% predicted a collision rate of 1.171 per year, which equates to 35 over 30 years, and just over 1 collision per year. The scale of predicted collision risk and resultant fatalities would not have an adverse impact on EC populations at local, regional or national level, relative to available population data (incl. I-WeBS, BTO Birdfacts & DAU survey data). There was a decrease to the predicted Collision Risks, to less than 1 collision per year after the models were re-run to take account of the additional non-breeding survey data provided by the applicant.

Other species: several other species of waterbird (incl. Scooter, Mallard, Teal & Coot) that frequent the designated and non-designated waterbodies within a c.15km radius of the windfarm site were not recorded as frequent visitors to the site and environs. However, following the further surveys, Collision Risk modelling was undertaken for some additional species (incl. Eurasian teal, Mallard, Northern shoveler & Common snipe) which concluded that there is a negligible risk of collision with turbines, given their low survey numbers.

***Barrier, Displacement and Cumulative impacts*:**

The proposed turbines in the N and S Clusters could interfere with bird flights in the surrounding area, either on its own or in combination with other windfarms and projects in the wider area. This could give rise to barrier effects, displacement and a potential loss of energy storage by the affected species who would have to travel longer distances to reach their destinations, with a resultant adverse impact on breeding rates. There are three other proposed, permitted and operational windfarms within a 8km to 20km radius of the windfarm site (incl. Skrine & Derrane [2 x turbines] and Kilcash [1x turbine]) and a nearby (c.100m) operational Cam Roadstone Quarry along the R363. The EIAR VP surveys indicate that the windfarm site is not regularly foraged or overflown by migratory species associated with the surrounding and further afield National or European sites, although it could lie within or close to flightpaths for several species commuting between the various waterbodies in the surrounding area. However, based on the foregoing assessments, I am satisfied that there would be no site specific or cumulative impacts, barriers to movement or species displacement. Furthermore, given the lack on any anticipated significant local impacts on birds, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in-combination with other projects.

Conclusion:

In conclusion, no significant adverse long-term impacts on resident, wintering or migratory wetland and waterbirds are anticipated during the windfarms c.30-year operational lifespan, in terms of: - loss of foraging, resting, nesting or breeding habitat; damage to supporting habitat (incl. turlough connectivity); increased mortality as a result of collisions with turbine rotor blades; or the creation of barrier effects with resultant displacement or energy deficits (incl. site specific & cumulative).

***Other bird species**:*

Most common and passerine species recorded within the site and environs will gradually habituate to the works after the construction phase is completed, and the windfarm is operational. I note that the DAU (NPWS) refer to potential adverse impacts on Yellowhammer resulting from the loss of hedgerows and scrubland,

particularly in the more rugged sections of the S Cluster. The EIAR proposes to replace lost hedgerows and calcareous grasslands which would result in a net overall gain in Yellowhammer habitat in terms of biodiversity in the long term. The recommended omission of the turbines located within the Killeglan Karst Landscape section of the S Cluster would also have a positive impact on the Yellowhammer population. The risk of collision with turbine rotor blades would be low for all remaining species relative to population numbers, and no significant adverse long-term impacts are anticipated in terms of habitat loss, displacement or mortality.

Decommissioning Phase:

Less impacts anticipated than during the construction and operational phases subject to a similar range of mitigation measures in relation to noise, and the protection of habitats, species, and water quality and quantity.

7.10.6 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, quarries, plans and projects in the surrounding area would be minimal in extent, having regard to the conclusion of no significant adverse impacts at project level.

Conclusion: I have considered all the written submissions made in relation to birds, including those of Roscommon County Council, the DAU (NPWS) and several of the Observers, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise.

Overall conclusion:
Having regard to the foregoing, I am satisfied that the proposed development would not have any significant, adverse, long term or permanent impacts on bird species subject to the full implementation of the EIAR mitigation measures, any

recommended conditions and adherence to all relevant guidance and best construction practice. Furthermore, the proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, grid connections, plans or projects in the wider area.

7.11 Cultural Heritage & Material Assets (Tourism & Heritage)

7.11.1 Project description

The proposed windfarm would comprise the construction of 20 x turbines along with associated site works which would include new and upgraded entrances and internal access tracks, underground cabling and transmission cables, substation, met mast, temporary construction compounds and spoil depository areas, along with minor works along the delivery and grid connection routes. The proposed works would therefore inevitably give rise to ground disturbance.

7.11.2 Project location

The proposed windfarm would occupy a slightly elevated and moderately undulating rural location in S Roscommon to the E of the River Suck and W of Lough Ree. The lands are mainly characterised by farmland, with several dispersed houses and farms along the surrounding regional and local road networks. There are several cultural heritage features, amenity areas and walking routes in the wider area.

7.11.3 Environmental Impact Assessment Report

Chapter 13 of the EIAR dealt with archaeology and cultural heritage and several desktop and field studies were undertaken. It identified 5 x National Monuments within 10km of the EIAR site (incl. ringforts) but none within the windfarm site, and c.129 Recorded Monuments within 1km of the EIAR site boundary. It identified 38 x Recorded Monuments in the overall site, eight of which are located within the footprint of the proposed development (incl. 6 x field systems, 1 x wall & 1 x road/track). It noted that the underlying soils may have potential for further archaeological remains. There are no Protected structures or NIAH features within or near the site although there are several features of archaeological and heritage interest in the wider area including along the haul/delivery route and within c.100m of the grid connection route. As no works are proposed in these areas no adverse impacts are predicted. It noted the presence of the Clonmacnoise Monastic Site to the far S and Rathcroghan megalithic complex to the far N. The EIAR concluded that

no sites of archaeological or heritage interest would be adversely affected by the proposed construction works subject to mitigation measures (incl. pre-testing, archaeological monitoring during construction, avoidance & preservation by record) although it concluded that the visual setting of some National Monuments could be affected (incl. a ringfort, motte & baily and an unclassified castle).

Parts of ***Chapter 5 and 12*** of the EIAR dealt with Tourism and Amenity in relation to employment, attractions, amenity areas, landscapes, lakes, views, driving and walking routes (Refer to Sections 7.4 and 7.5 above). It concluded that the tourism and amenity potential of the area would not be affected by the proposed turbines.

Chapter 14 of the EIAR dealt with material assets with respect to resources, telecommunications, utility infrastructure and aviation. It concluded that the windfarm would not adversely affect any of these resources or interfere with air traffic and no electromagnetic interference is expected. The EIAR did not predict any adverse impacts on archaeology, cultural heritage, tourism, or material assets, subject to mitigation measures with no residual or cumulative impacts predicted.

7.7.4 Policy context

The national, regional and local policy context is summarised in section 3.0 above.

7.11.5 Assessment

As previously stated, I surveyed the wind farm site, the surrounding area, and the wider road network over two x 2-day periods in October 2022 and June 2023. I had regard to the relevant EIAR archaeological, cultural heritage, tourism, amenity and material assets studies which are summarised in section 7.11.3 above. I had regard to any concerns raised and to any response of the applicant to them in the Further Information and submissions. I also had regard to relevant national, regional and local planning policy, which is summarised in Section 3.0 above. I note that the Board's previous reason for refusal of planning permission, as summarised in section 1.5 above, did not raise any concerns in relation to cultural heritage and material assets (incl. tourism & heritage).

Archaeology:

There are no National Monuments within the site, however there are several Recorded Monuments within the windfarm site and a substantial number of Recorded Monuments and known sites of archaeological interest within the surrounding area (incl. ringforts, field systems & enclosures). There are also several features in the wider area and along the grid connection and delivery routes. The EIAR mitigation measures would ensure that the groundworks are pre-tested. It is also possible that the windfarm site may contain as yet undiscovered artefacts. All of the ground works at the site and along the grid connection route should be monitored during the construction phase in accordance with the mitigation measures. Any discoveries should be recorded and preserved by record. The proposed development would not have any significant adverse impacts on the character or setting, and/or views from the further afield Clonmacnoise Monastic Site to the S or Rathcroghan megalithic complex to the far N. It is noted that the County Council did not raise any specific concerns in relation to archaeology.

Protected structures & NIAH features:

There are no Protected Structures or NIAH sites located within the windfarm site or the immediate vicinity, although there are several interesting features in the surrounding area, but none of particular note. There are also several features of interest located along the delivery and haul routes, no works are proposed along this route, however care should be taken to ensure that no damage occurs to structures of interest in the wider area. It is noted that Council did not raise any specific concerns in relation to cultural heritage.

Tourism:

The main tourism issues relate to the visual impact of the proposed windfarm on the surrounding landscape, heritage sites, protected views and scenic routes along with the consequent impact on tourism, recreation and amenity (incl. walking, driving, cycling & fishing). There are intermittent views towards the site from the surrounding local road network and from some further afield heritage and amenity sites (incl. Ballyforan Marina to the W, Lough Funshinagh and Lough Ree E, and Clonmacnoise Monastic Site to the S). It is noted that recent research on the impact of windfarms

on tourism and recreational activities is varied and inconclusive. However, having regard to the conclusions reached in section 7.4 (Landscape & Visual Amenity) above, I am satisfied that the proposed development would not have a significant impact on tourism, amenity or recreation. Furthermore, the proposed windfarm and grid connection would not unduly interfere with the character or setting of any heritage features which form part of the tourism and amenity offer of the county (and surrounding counties) because of the separation distances between the windfarm, grid connection and delivery routes, and these features.

Material assets:

The proposed windfarm would not have a significant impact on aviation, having regard to the separation distance to the nearest airport and subject to compliance with standard aviation conditions. The IAA did not make a submission on the application, however a condition should be attached in respect of standard visibility requirements. I am satisfied that there would be no significant impacts from electromagnetic interference given the dispersed settlement pattern in the surrounding area. However, measures (Incl. regular monitoring) should be put in place to avoid interference. The operational windfarm project will contribute to the provision of renewable energy and contribute to a reduction in greenhouse gas emissions which would have a positive environmental impact (refer to section 6.4 of the Planning Assessment of a more detailed assessment). It is also noted that the County Council did not have any specific concerns in relation to telecommunications or aviation. The proposed windfarm would not interfere with agriculture, forestry, fisheries or quarries, (refer to sections 7.7 & 7.8 above for a more detailed assessment of potential impacts on soils, water quality & fisheries). However, the proposed development has the potential to adversely affect the character and use of the Killeglan Karst Landscape which is of national geological importance and of value to geo-tourism and environmental education (refer to section 7.4 above for a more detailed assessment of potential impacts on this unique landscape).

Decommissioning Impacts:

None anticipated following the removal of the turbine structures.

7.11.5 Conclusions

Residual Effects: Residual impacts are not predicted to be significant subject to the implementation of EIAR mitigation measures and any recommended conditions.

Cumulative Impacts: Any cumulative impacts during the operational phase when taken in combination with other windfarms, plans and projects in the surrounding area would be minimal in extent, having regard to the conclusion of no significant adverse impacts at project level.

Conclusion: I have considered any written submissions made in relation to material assets and cultural heritage, in addition to those specifically identified in this section of the report. I am satisfied that they have been appropriately addressed in terms of the application and that no significant adverse effect is likely to arise, subject to the implementation of EIAR mitigation measures and any recommended conditions.

Overall conclusion:
Having regard to the above, I am satisfied that the proposed development would not adversely affect cultural heritage, tourism, amenity or material assets to any significant extent, subject to the full implementation of the EIAR mitigation measures and any recommended planning conditions. The proposed development would not give rise to any significant adverse cumulative impacts in-combination with other windfarms, the grid connection routes, or plans and projects in the area.

7.12 Summary of interactions & Interrelationships

I have also considered the interrelationships between factors and whether this might as a whole affect the environment, even though the effects may be acceptable when considered on an individual basis. In particular the potential arises for the following interactions and interrelationships.

Population & human health:

- Noise, dust & shadow flicker
- Air Quality & climate
- Landscape & visual amenity
- Material Assets (electromagnetic interference)
- Road and traffic (safety & disturbance)

Air & climate

- Noise & dust
- Roads & traffic (emissions)
- Population & human health

Landscape

- Population & human health (visual amenity)
- Material Assets & Cultural Heritage (tourism & recreation)

Biodiversity:

- Hydrology (water quality & fisheries)
- Population & human health (water quality)
- Material assets (tree felling)
- Landscape (visual amenity)
- Soils & geology (siltation & water quality)
- Land

Land, Soil & water:

- Air quality
- Biodiversity (terrestrial & aquatic)
- Population & human health

Material Assets & Cultural Heritage:

- Population & human health
- Land
- Landscape (visual)
- Roads and traffic (disturbance & safety)

In conclusion, I am satisfied that any such impacts can be avoided, managed and mitigated by the measures which form part of the proposed development and any recommended planning conditions.

7.13 Consideration of cumulative impacts

There are several existing and permitted plans and projects located within a 20km radius of the proposed development which have the potential to act in-combination with the proposed development, particularly in relation to water quality in the surrounding surface and ground water bodies. These include a number of agricultural, commercial, water supply, wastewater treatment, quarrying (incl. Cam quarry) and urban projects as well as further afield operational and permitted windfarms. I am satisfied that any in-combination effects can be avoided, managed and mitigated by the measures which form part of the proposed development and any recommended planning conditions. There is, therefore, nothing to prevent the granting of permission on the grounds of cumulative effects.

7.14 Consideration of risks associated with major accidents and/or disasters.

None identified and the potential impacts associated with climate change have been factored into the relevant sections of the EIAR.

7.15 Reasoned Conclusion on Significant Effects

Having regard to the examination of environmental information contained above, and in particular to the EIAR, the planning authority report, and submissions from prescribed bodies and observers in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment have been identified in this report as summarised below.

- The ***risk of pollution of ground and surface waters during the construction phase*** through a lack of control of surface water during excavation and construction, the mobilisation of sediments and other materials during excavation and construction. The construction of the proposed project could also potentially impact negatively on ground and surface waters by way of contamination through accidents and spillages. These impacts would be mitigated by the implementation of the Drainage Management Plan, agreement of measures within a Construction and Environment Management Plan, and the implementation of mitigation measures related to: - design and avoidance; accidental spills and contamination; sediment and erosion control; and drainage management.

- The ***risk of disruption to ground water recharge and flow patterns during the construction and operational phase*** through a lack of control over and mismanagement of the excavation and drainage works, or inappropriate siting of turbines. These impacts would be mitigated by the avoidance of bedrock excavations, restricting subsoil excavations to above the winter watertable level, the implementation of the Drainage Management Plan, the agreement of measures within a Construction and Environment Management Plan, and the implementation of mitigation measures related to: - design and avoidance. protecting the underlying groundwater table and managing surface water drainage.

- The ***risk of soil erosion and soil instability during the construction and operational phase*** through a lack of control over, or mismanagement of the excavation and soil/spoil removal works. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management and Spoil Management Plans, and the implementation of mitigation measures related to: - stability and erosion.

- ***Biodiversity impacts*** arising from habitat loss and fragmentation, changes to the vegetation on the site, loss of foraging habitat and disturbance to birds and bats, connections to foraging, aquatic and water dependent habitats and general disturbance during the construction and operational phases. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan, the measures contained in the Biodiversity Mitigation and Enhancement Plan, and the implementation of mitigation measures which include: - Pre-construction Bird, Bat & Mammal Surveys; Water Quality protection measures (as above); an Invasive Species Management Plan; and the appointment of an Ecological Clerk of Works.

- The proposed project gives rise to an increase in ***vehicle movements and resulting traffic impacts*** during the construction phase and significant impacts on the road network can be avoided by the proposed works along the road network. These impacts would be mitigated by the agreement of measures within a Construction and Environment Management Plan and the implementation of mitigation measures related to: - pre-construction road condition surveys; deliveries; and the implementation of a Construction Traffic Management Plan.

- ***Air pollution and noise during the construction and operational phase*** which would impact negatively on sensitive receptors and populations in the vicinity of the site. These impacts are substantially avoided by the limited number of sensitive receptors in close proximity to the proposed development. Any remaining impacts would be mitigated by the agreement of measures

within a Construction and Environment Management Plan and the implementation of mitigation measures related to: - air quality/dust and noise.

- ***Shadow flicker and noise during the operational phase*** such as would impact negatively on sensitive receptors and populations in the vicinity of the site. These impacts are substantially avoided by the limited number of sensitive receptors in close proximity to the site and any remaining impacts would be mitigated by the agreement of a turbine curtailment strategy and measures within a Construction and Environment Management Plan.

- The project could give rise visual impacts on the **landscape** during the operational phase as a result of the installation of tall structures.

- The proposed development would have ***potentially significant positive environmental impacts*** during the operational phase from the generation of renewable energy with a corresponding reduction in carbon emissions.

In ***conclusion***, having regard to the above identified significant effects, I am satisfied that subject to mitigation measures proposed the proposed development would not have any unacceptable direct or indirect impacts on the environment.

8.0 APPROPRIATE ASSESSMENT

8.1 Compliance with Articles 6(3) of the EU Habitats Directive

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

8.2 Natura Impact Statement

The application was accompanied by a Stage 1 AA Screening Report and a Stage 2 NIS. The report described the site and the proposed development, and utilised the extensive data collected as part of the EIAR desk and field surveys. The reports confirmed that the proposed development would not be located within a European site. The AA screening exercise identified several European sites within a potential Zone of Influence, it had regard to the EIAR ecological surveys and assessments [soils, geology, hydrology, hydrogeology, water quality, aquatic & terrestrial ecology, bat and bird surveys (incl. collision risk assessments)], and it screened out the sites which would not be affected by the proposed development on the basis of proximity, and aquatic or mobile connections.

The **AA Screening** exercise identified the following European sites that have the potential to be affected by the proposed windfarm development: -

Killeglan Grassland SAC	River Suck Callows SPA
Ballynamona Bog & Corkip Lough SAC	Lough Croan Turlough SPA
Four Roads Turlough SAC	Four Roads Turlough SPA
River Shannon Callows SAC	Lough Ree SPA
	Middle Shannon Callows SPA

The ***Natura Impact Statement*** listed the Conservation Objectives and Special Conservation Interests for the sites. It identified the potential sources of direct and indirect impacts on the sites, assessed the potential impacts relative to its Conservation Objectives. It had regard to the various EIAR surveys (listed above). It concluded that the risk for the habitats and species which are designated as Qualifying and Special Conservation Interest for the European sites was minimal subject to the implementation of the EIAR mitigation measures.

The desk top studies and site surveys described the site and surrounding area along with potential connections to nearby and further afield European sites. The reports assessed the site and its environs for terrestrial, aquatic and mobile species of Qualifying and Special Conservation Interest and for the European sites. The ecological characteristics of the sites were described as was the recorded presence of any constituent qualifying habitats and species. The hydrological and hydrogeological characteristics of the site and environs were also described. The inter-connectivity between the site and the underlying groundwater and surface water bodies was examined, and water quality data for the receiving waterbodies was provided.

The NIS formally concluded that, in the light of best scientific knowledge the proposed development by itself and in-combination with other plans or projects, will not adversely affect the integrity of any of the European Sites concerned.

Having reviewed the NIS and supporting documentation, I am satisfied that it provides adequate information in respect of the baseline conditions, does clearly identify the potential impacts, and does use best scientific information and knowledge, and details of mitigation measures are provided. I am satisfied that the information is sufficient to allow for the appropriate assessment of the proposed development, subject to the further consideration of European sites located within an enlarged Zone of Influence (further analysis below).

8.2 AA Screening Assessment

The main issues related to ecology, the planning authority's consideration of the proposed development, the concerns raised by the Prescribed Bodies (incl. NPWS) and the Observers, and the applicant's response to the concerns are summarised and addressed in section 4.0 of this report. Section 7.0 contains an environmental impact assessment, and Sections 7.7 to 7.10 should be read in conjunction with this assessment (Land, Soil & Geology, Hydrology & Hydrogeology, Biodiversity and Birds).

The European sites within the Zone of Influence (i.e the area over which an impact can have a potential effect in relation to proximity of European sites and the mobility of faunal species from further afield sites) of the proposed works and approximate separation distances are set out below. The applicant's bird surveys recorded the presence of bird species flying over or close to the site that may be of Special Conservation Interest for several nearby and further afield European sites.

However, having regard to the mainly agricultural characteristics of the subject site and environs, the substantial separation distances between the proposed works and the European sites in-combination with the specific features and requirements for many of the recorded bird species (incl. habitat preference, dietary needs & core foraging distances), only the European sites that have a realistic and pragmatic mobile connection to the windfarm site will be included in this Screening assessment.

The proposed windfarm would not be located within an area covered by a European site designation, and the works are not relevant to the maintenance of any such European site. There are many European sites located within a c.15km radius of the proposed windfarm development at The N and S Clusters. The Qualifying Interest habitats and species and the Special Conservation Interest bird species, along with the approximate separation distances from these European sites are listed below.

European sites	*QIs*/SCIs	Approx. Distance
Lough Croan *SAC* & SPA	*Turloughs,* Shoveler & Golden Plover Greenland White-fronted Goose Wetland and Waterbirds	Cronin: 1.2km Skyvalley: 4.5km Grid connection: 3km
Four Roads Turlough *SAC* & SPA	*Turloughs* & Golden Plover Greenland White-fronted Goose Wetland and Waterbirds	Cronin: 3km Skyvalley: 8km Grid connection: 5km
Lough Funshinagh *SAC*	*Turloughs & Rivers with muddy banks with Chenopodion rubri & Bidention vegetation*	Cronin: 6km Skyvalley: 7km
Lisduff Turlough *SAC*	*Turloughs*	Cronin: 7km Skyvalley: 10km
Killeglan Grassland *SAC*	*Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (orchid sites)*	Cronin: 5km Skyvalley: 0.5km
River Suck Callows SPA	Whooper Swan, Wigeon & Golden Plover Lapwing & Greenland White-fronted Goose Wetland and Waterbirds	Cronin: 2.5km Skyvalley: 3km
Lough Ree *SAC* & SPA	*Natural eutrophic lakes & Limestone pavements* *Semi-natural dry grasslands* *Active & Degraded raised bogs* *Alkaline fens & Alluvial forests* *Bog woodland & Otter* Little Grebe, Whooper Swan & Wigeon, Teal, Mallard, Shoveler & Tufted Duck Common Scoter, Goldeneye & Coot Golden Plover, Lapwing & Common Tern Wetland and Waterbirds	Cronin: 10km Skyvalley: 9km Grid connection: 1.5km

Ballinturly Turlough SAC	*Turloughs*	Cronin: 11km Skyvalley: 14 + km
Castlesampson Esker SAC	*Turloughs & Semi natural dry grasslands*	Cronin: 8km Skyvalley: 2.5km Grid connection: 2.5km
Ballynamona Bog & Corkip Lough SAC	*Turloughs* *Active & Degraded Raised Bogs* *Depressions on peat substrates* *Bog woodland*	Cronin: 6km Skyvalley: 2km Grid connection: 0.2km
Aughrim (Aghrane) Bog SAC	*Degraded Raised Bogs*	Cronin: 10km Skyvalley: 12km
Ballygar (Aghrane) Bog SAC	*Active & Degraded Raised Bogs*	Cronin: 10km Skyvalley: 12km
Middle Shannon Callows SPA	Whooper Swan & Wigeon Corncrake, Golden Plover & Lapwing Black-tailed Godwit & Black-headed Gull Wetland and Waterbirds	Cronin: 13 + km Skyvalley: 12km Grid connection: 1.3km (Cross River)
River Shannon Callows SAC	*Molinia & Lowland hay meadows* *Alkaline fens & Alluvial forests* *Limestone pavements & Otter*	Cronin: 15 + km Skyvalley: 14km Grid connection: 1.3km (Cross River)

Conservation Objectives:

- To maintain or restore the favourable conservation condition of the Annex 1 habitat(s) and/or the Annex 11 species for which the SACs have been selected.
- To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for the SPAs.
- To maintain or restore the favourable conservation condition of the wetland habitat at several SPAs as a resource for the regularly occurring migratory waterbirds that utilise them.

The potential effects relate to:

- Release and transport of pollutants in ground and/or surface water flowing into the European sites via underlying ground (windfarm) or surface water bodies (incl. grid connection).
- Ex-situ impacts on qualifying species outside the European sites but which are an integral and connected part of the population of qualifying interest species, including: -
    - Loss of or damage to habitats used by QI/SCI species.
    - Loss of foraging & commuting areas used by QI/SCI species.
    - General disturbance to QI/SCI species during construction.
- Interference with flight lines of species associated with the European sites or mortality related to collision with operational turbines.
- Impacts on water quality and quantity, and/or vegetative composition of support habitats including Turloughs.
- Impacts on vegetative composition of habitats and/or support habitats as a result of colonisation by invasive species.

Based on my examination of the NIS report and supporting information (incl. the EIAR desktop studies & field surveys), NPWS website and waterbird survey data, the submissions from the County Council, NPWS and Observers, aerial and satellite imagery; the scale of the proposed works and nature of the likely effects; the substantial separation distances (incl. Lough Ree, and Aughrim & Ballygar Bogs); uphill gradients relative to the SAC (incl. Lough Croan Turlough) and/or intervening topography (incl. Lisduff & Ballinturly Turloughs); the lack of an hydraulic and/or functional relationship between the proposed works and the European sites (incl. Castlesampson Esker & Lough Funshinagh); the site specific characteristics and species specific requirements (incl. habitat preference, diet & core foraging range); and the absence of suitable support habitats or down gradient aquatic connections between the European site and the proposed works over a reasonably pragmatic distance; taken in conjunction with my own assessment of the subject site and surrounding area, I conclude that a Stage 2 Appropriate Assessment is not required for the following European sites which I consider not to lie within the Zone of Influence for the aforementioned reasons.

Lough Croan Turlough SAC	**Castlesampson Esker SAC**
Lough Funshinagh SAC	**Aughrim (Aghrane) Bog SAC**
Lisduff Turlough SAC	**Ballygar (Aghrane) Bog SAC**
Ballinturly Turlough SAC	**Lough Ree SAC**

AA Screening Conclusion

In conclusion, having regard to the nature and scale of the proposed development, to the separation of the windfarm site from the European sites, to the nature of the qualifying/conservation interests and conservation objectives of the European sites and to the available information as presented in the EIAR and NIS regarding ground and surface water pathways and mobile connections between the windfarm site and the European sites, and other information available, it is my opinion that the proposed development has the potential to affect the following European sites, having regard to the conservation objectives of this site, and that progression to a Stage 2 Appropriate Assessment is required.

Lough Croan SPA	**Killeglan Grassland SAC**
Four Roads Turlough SPA	**Ballynamona Bog & Corkip Lough SAC**
River Suck Callows SPA	**River Shannon Callows SAC**
Middle Shannon Callows SPA	**Four Roads Turlough SAC**
Lough Ree SPA	

8.4 Appropriate Assessment:

The details for the remaining European sites within the Zone of Influence of the proposed development are set out below:

Favourable Conservation Status is achieved when:

1. ***Habitats***

    - The natural range (and area covered) is stable or increasing,
    - The specific structure and functions which are necessary for its long-term maintenance exist now and for the foreseeable future,
    - The conservation status of its typical species is favourable.

2. ***Species***

    - Population dynamics data indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats,
    - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future,
    - There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Potential direct effects:

The proposed windfarm would not be located within a European site, and it is not relevant to the maintenance of a European site. No potential for direct effects having regard to the location and scale of the proposed development and to the separation distance between the works and the qualifying interest habitats and species.

Potential indirect effects:

There is potential for indirect effects on the European sites and their qualifying habitats and species during the ***construction phase*** resulting from the loss of foraging, resting and nesting places, loss of or damage to support habitat, and water pollution. The unmitigated release of fine sediments during construction works and hydrocarbons by way of accidental spillages from machinery, could give rise to water

pollution in the surrounding waterbodies with resultant impacts on the availability of biomass for the constituent species. Excavations into bedrock could give rise to groundwater contamination and changes in flow patterns with resultant impacts on the surrounding freshwater habitats in relation to quality and quantity. The uncontrolled introduction of invasive species from works vehicles could give rise to the colonisation of support habitats by invasive species, with resultant impacts on habitats and species. All in the absence of mitigation. There is also potential for additional significant indirect adverse effects during the ***operational phase*** when the works are complete in relation to the operational turbines and mobile species (incl. collision risk, displacement, barrier effects & energy reserves).

Mitigation measures:

The EIAR & NIS mitigation measures (incl. design & management), which would serve to protect the European site and its SCI species from adverse effects, include:

- Avoidance
- Design (incl. interceptor drains, small working areas, flow limiters, attenuation ponds, sediment traps, settlement ponds & silt fences).
- Pre-emptive site drainage management (incl. seasonality, timing & weather dependency of works).
- Drainage Management Plan
- Identification and avoidance of karst features.
- No dewatering below local ground water levels.
- No on-site maintenance of vehicles or plant.
- Bunded refuelling areas, emergency plan & spill kits.
- Control of cement & concrete - no on-site batching.
- No in-stream works.
- Preparation of a CEMP.
- Adherence to best construction practices.
- Timing & seasonality of works.
- Buffer zones (incl. waterbodies & nests).
- Appointment of an Environmental Manager & Project Ecologist.
- Monitoring (pre & post construction) for birds.

Threats to European sites:

Potential threats to the European sites include those posed by agricultural activities, urban and domestic wastewater discharges, quarrying (incl. at the nearby Cam Quarry), public water abstraction, and recreational activities (incl. boating & fishing).

Suggested conditions:

The EIA assessment contained in Section 7.0 of this report recommended several conditions including the omission of turbines in the S Cluster, controls on bedrock excavation to avoid incursion into the underlying watertable, and additional measures to protect habitats and species (buffers & pre-construction surveys).

Potential in-combination effects:

Potential indirect in-combination effects relate to damage to qualifying habitats and species, and support habitats because of a similar range of threats as outlined above, having regard to the various plans or projects in wider area (Incl. windfarms & agriculture, domestic discharges & recreation) in the absence of mitigation.

Likely significant effects on the SPAs

Lough Croan Turlough, Four Roads Turlough, River Suck Callows, Lough Ree & Middle Shannon Callows SPAs*:* These SPAs are located between 2km and 15km of the N and S Clusters at Cronin and Skyvalley and they are designated for a variety of bird species (incl. Greenland white fronted geese, Whooper swan, Black-headed gull, Golden plover, Northern lapwing, Eurasian widgeon & several other species of waterbird). Having regard to the nature and scale of the work required to erect the windfarm (which would involve substantial excavations and the installation of tall structures), and the results of the extensive bird survey results that were submitted by the applicant as part of the original application, and as unsolicited and solicited FI, it is possible that the proposed development could have an adverse effect on the these SPAs, their SCI species and/or their Conservation Objectives.

Site: River Suck Callows SPA – Site code: 004097		
Description: Linear waterbody located c.3km to the W of the windfarm site which is the largest tributary of the River Shannon and it has extensive areas of seasonally flooded callow; it supports an internationally important flock of GWFG which congregates mainly in the middle reaches of the river; it also supports nationally important population of Whooper swan, Widgeon, Golden plover & Lapwing; and other non-SCI wetland & waterbird species include Mute swan, Curlew, Snipe & Black-headed gull. Part of the River Suck Callows SPA is a Wildfowl Sanctuary.		
Conservation Objectives: **1.** To maintain the favourable conservation condition of the SCI bird species in this SPA, which is defined by the following list of attributes and targets. **2.** To maintain the wetland habitats at this SPA as a resource for the regularly occurring migratory waterbirds that utilise these areas, which is defined by the following list of attributes and targets.		
SCI species	**Attributes & Targets**	**Assessment**
Whooper Swan **Wigeon** **Golden Plover** **Lapwing** **Greenland White-fronted Goose**	***Winter population trend***, stable or increasing; ***Winter spatial distribution***, sufficient number of locations, area & availability of suitable habitat; ***Disturbance at wintering site***, should not significantly impact the achievement of targets for population trend & spatial distribution; ***Barriers to connectivity & site use***, should not significantly impact the wintering population's access to the SPA or other related sites; ***Forage spatial distribution, extent and abundance***, sufficient amount of forage biomass to support the population target; ***Roost spatial distribution & extent,*** sufficient availability of suitable roosting habitat to support the population target; ***Supporting habitat area & quality***, sufficient area of utilisable habitat	Refer to EIA Biodiversity Section 7.10.5 for a detailed assessment of potential effects on these wetland and waterbird species. It concluded that there would be no significant adverse impacts resulting from: - loss of or damage to foraging, resting or nesting places, or support habitat (incl. surrounding interconnected waterbodies); collision risk or resultant fatalities; or displacement, barrier effects or resultant reduced energy storage. Having regard to the population numbers at this SPA site, based on the EIAR surveys, and the various DAU (NPWS) bird counts at the time the site was designated for the qualifying species and survey data for subsequent years, I am satisfied that the project would not have an adverse effect on the SCI species at this site at population level relative to the species (and habitat) specific Attributes and Targets where listed (incl. Winter population trend & distribution,

	available in related sites.	Disturbance, Barriers to connectivity, Foraging or Roost spatial distribution, or Supporting habitat).
Wetlands	***Habitat area,*** no significant loss other than naturally occurring variations that occurring from natural patterns of variation; ***Habitat quality & functioning***, no other than naturally occurring variations that occurring from natural patterns of variation.	As above.
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts or barriers to movement as a result of in-combination effects, based on my analysis of the survey results and models. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.		
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.		

Site: Lough Croan Turlough SPA- Site Code: 004139

Description: Waterbody located to c.5km E of River Suck, and c.1.2km N of N Cluster & c.4.5km NW of S Cluster; it supports nationally important numbers of GWFG which are part of an internationally important flock at the River Suck; it also supports nationally important numbers of Shoveler & Golden plover; other non-SCI species include Whooper swan and several wetland & waterbirds.

Conservation Objectives:

1. To maintain or restore the favourable conservation condition of the wetland habitat at this SPA as a resource for the regularly occurring migratory waterbirds that utilise it.
2. To maintain or restore the favourable conservation condition of the wetland habitat at this SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

SCI species	Attributes & Targets	Assessment
Greenland White-fronted Goose **Golden Plover** **Shoveler** **Wetland & Waterbirds**	None specified for any of the qualifying the SCI species.	Refer to EIA Biodiversity Section 7.10.5 for a detailed assessment of potential effects on these wetland and waterbird species. It concluded that there would be no significant adverse impacts resulting from: - loss of or damage to foraging, resting or nesting places, or support habitat (incl. surrounding interconnected waterbodies); collision risk or resultant fatalities; or displacement, barrier effects or resultant reduced energy reserves. Having regard to the population numbers at this SPA site, based on the EIAR surveys, and the various DAU (NPWS) bird counts at the time the site was designated for the qualifying species and survey data for subsequent years, I am satisfied that the project would not have an adverse effect on the SCI species at this site at population level. (Note: Shoveler was not recorded in significant numbers at the site & environs which do not contain optimal foraging habitat, and/or is outside the core range of the remaining SCI species).

In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts or barriers to movement as a result of in-combination effects, based on my analysis of the survey results and models. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.

Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.

Site: Four Roads Turlough SPA - 004140

Description: Waterbody located c.2km E of River Suck, and c.3km NW of N Cluster & c.6km NW of S Cluster; it is visited by a nationally important numbers of GWFG which are part of an internationally important flock at the River Suck; it also supports nationally important numbers of Golden plover; other non-SCI wetland &waterbird species include Widgeon, Shoveler & Lapwing and occasionally Whooper swan. Much of the site is also a Wildfowl Sanctuary.

Conservation Objectives:

1. To maintain or restore the favourable conservation condition of the bird species listed as SCIs for this SPA.
2. To maintain or restore the favourable conservation condition of the wetland habitat at this SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

SCI species	Attributes & Targets	Assessment
Golden Plover **Greenland White-fronted Goose** **Wetland and Waterbirds**	None specified for any of the qualifying the SCI species.	Refer to EIA Biodiversity Section 7.10.5 for a detailed assessment of potential effects on these wetland and waterbird species. It concluded that there would be no significant adverse impacts resulting from: - loss of or damage to foraging, resting or nesting places, or support habitat (incl. surrounding interconnected waterbodies); collision risk or resultant fatalities; or displacement, barrier effects or resultant reduced energy reserves. Having regard to the population numbers at this SPA site, based on the EIAR surveys, and the various DAU (NPWS) bird counts at the time the site was designated for the qualifying species and survey data for subsequent years, I am satisfied that the project would not have an adverse effect on the SCI species at population level.

In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts or barriers to movement as a result of in-combination effects, based on my analysis of the survey results and models. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.

Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European sites in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.

Site: Middle Shannon Callows SPA – Site code: 004096		
Description: Linear waterbody located c.13km to the E of windfarm site; it has extensive areas of seasonally flooded callow; it is of international importance as it regularly supports over 20,000 wintering waterbirds; this includes internationally important populations of Whooper swan & Black-tailed Godwit; it also supports nationally important numbers of Golden plover, Widgeon, Lapwing & Black-headed gull; other non-SCI wetland & waterbird species include Mute swan, Curlew, Snipe & Greenland white-fronted goose; and non-SCI visiting species include Raptors (incl. Hen harrier & merlin) & Passerines (incl. Skylark).		
Conservation Objectives: **1.** To maintain the favourable conservation condition of the SCI bird species in this SPA, which is defined by the following list of attributes and targets. **2.** To maintain the favourable conservation condition of wetlands in this SPA, which is defined by the following list of attributes and targets.		
SCI species	**Attributes & Targets**	**Assessment**
Whooper Swan **Wigeon** **Golden Plover** **Lapwing** **Black-tailed Godwit** **Black-headed Gull**	***Winter population trend***, stable or increasing; ***Winter spatial distribution***, sufficient number of locations, area & availability of suitable habitat; ***Disturbance at wintering site***, should not significantly impact the achievement of targets for population trend & spatial distribution; ***Barriers to connectivity*** & site use, should not significantly impact the wintering population's access to the SPA or other related sites; ***Forage spatial distribution***, ***extent & abundance***, sufficient amount of forage biomass to support the population target; ***Roost spatial distribution & extent***, sufficient availability of suitable roosting habitat to support the population target; ***Supporting habitat*** area & quality, sufficient area of utilisable habitat available in	Refer to EIA Biodiversity Section 7.10.5 for a detailed assessment of potential effects on these wetland and waterbird species. It concluded that there would be no significant adverse impacts resulting from: - loss of or damage to foraging, resting or nesting places, or support habitat (incl. surrounding interconnected waterbodies); collision risk or resultant fatalities; or displacement, barrier effects or resultant reduced energy reserves. Having regard to the population numbers at this SPA site, based on the EIAR surveys, and the various DAU (NPWS) bird counts at the time the site was designated for the qualifying species and survey data for subsequent years, I am satisfied that the project would not have an adverse effect on the SCI species at population level relative to the species (& habitat) specific Attributes and Targets, where listed (incl. Winter population trend & distribution,

	related sites.	Disturbance, Barriers to connectivity, Foraging or Roost spatial distribution, or Supporting habitat).
Corncrake	None specified for any of the qualifying the SCI species.	As above.
Wetland	***Habitat area,*** no significant loss other than naturally occurring variations that occurring from natural patterns of variation; ***Habitat quality & functioning***, other than naturally occurring variations that occurring from natural patterns of variation.	As above.
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts or barriers to movement as a result of in-combination effects, based on my analysis of the survey results and models. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.		
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.		

Site: Lough Ree SPA – Site code: 004064		
Description: Large waterbody located c.12km to the E of the windfarm site along the River Shannon; one of the most important Midland sites for wintering and breeding waterbirds, with nationally important populations of Little Grebe, Whooper Swan, Wigeon, Teal, Mallard, Shoveler, Tufted Duck, Goldeneye, Coot, Golden Plover & Lapwing; and other non-SCI species include Curlew, Black-headed Gull, Mute Swan & GWFG (0ccasioal visitor). Parts of Lough Ree are Wildfowl Sanctuaries.		
Conservation Objective: 1. To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **2.** To maintain or restore the favourable conservation condition of the wetland habitat at this SPA as a resource for the regularly occurring migratory waterbirds that utilise it.		
SCI species	**Attributes & Targets**	**Assessment**
Little Grebe **Whooper Swan** **Wigeon,** **Teal** **Mallard** **Shoveler** **Tufted Duck** **Common Scoter** **Goldeneye** **Coot** **Golden Plover** **Lapwing** **Common Tern** **Wetland & Waterbirds**	None specified for any of the qualifying the qualifying SCI species.	Refer to EIA Biodiversity Section 7.10.5 for a detailed assessment of potential effects on these wetland and waterbird species. It concluded that there would be no significant adverse impacts resulting from: - loss of or damage to foraging, resting or nesting places, or support habitat (incl. surrounding interconnected waterbodies); collision risk or resultant fatalities; or displacement, barrier effects or resultant reduced energy reserves. Having regard to the population numbers at this SPA site, based on the EIAR surveys, and the various DAU (NPWS) bird counts at the time the site was designated for the qualifying species and survey data for subsequent years, I am satisfied that the project would not have an adverse effect on the SCI species at this site at population level. (Note: Only WS, EW, GP & NL were recorded in significant numbers at the site & environs, and that the site does not contain suitable foraging habitat and/or is outside the core range of the remaining SCI species).
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts or barriers to movement as a result of in-combination effects, based on my analysis of the survey results and		

models. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.

Likely significant effects on the SACs

Four Roads Turlough, Ballynamona Bog & Corkip Lough, Killeglan Grasslands & River Shannon Callows SACs: These SACs are located between 2km and 15km of the N and S Clusters at Cronin and Skyvalley and they are designated for a variety of habitats (incl. Turloughs & Grasslands) and one species (Otter). Having regard to the nature and scale of the work required to install the wind turbines and associated infrastructure at each site (incl. substantial site clearance, excavations & foundations), the characteristics of the surrounding lands which are in agricultural use, the separation distance between the proposed development and the European sites, the nature of the Qualifying Interests for each site, and the presence of a downstream aquatic connection over a reasonable distance, it is possible that the proposed development could have an adverse effect on these SACs and their Conservation Objectives.

SAC Site name	Qualifying Interests
Four Roads Turlough	Turloughs
Ballynamona Bog & Corkip Lough	Turloughs, Active & Degraded Raised Bogs, Depressions on peat substrates & Bog woodland
Killeglan Grassland	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (orchid sites)
River Shannon Callows	Molinia & Lowland hay meadows, Alkaline fens & Alluvial forests, Limestone pavements & Otter.

Site: Four Roads Turlough SAC – Site code: 001637		
Description: Annex 1 Priority habitat located c.2.5 km from the River Suck & c.3km NW of the N Cluster (Cronin) and c.8km NW of the S Cluster (Skyvalley); it lies below a low scarp of limestone hills and is an open, shallow basin without permanent standing water which seems to flood predictably and dry out early; relatively uniform vegetation with some interesting species (incl. Lesser Water-plantain): important as a refuge or feeding area for wildfowl & waders, some of national importance.		
Conservation Objective: To restore the favourable conservation condition of Turloughs in this SAC which is defined by the following list of attributes and targets.		
QI Habitats	**Attributes & Targets**	**Assessment**
Turloughs	***Habitat area***, stable at c.72ha or increasing, subject to natural processes; ***Habitat distribution***, no decline; ***Hydrological regime,*** maintain/restore appropriate natural regime necessary to support the natural structure & functioning of the habitat; ***Soil type,*** maintain variety, area & extent of soil types to support vegetation & biota; ***Soil nutrient status (N&P),*** maintain/restore status appropriate to soil types & vegetation communities; ***Physical structure,*** maintain sufficient wet bare ground; ***Chemical processes,*** maintain appropriate calcium carbonate deposition rate & concentration in soil; ***Water quality,*** restore appropriate water quality to support the natural habitat structure & functioning; ***Active peat formation***, maintain active peat formation; ***Vegetation composition (communities)***, restore area of sensitive & high conservation value; ***Vegetation composition (zonation)***, maintain/restore vegetation zonation/mosaic	Refer to EIA Hydrology & Hydrogeology Section 7.8.5 and Biodiversity Section 7.9.5 for a detailed description of ground and surface water movements and assessment of potential effects on this habitat. The referenced sections of the EIA concluded that there would be no significant adverse impacts resulting from: - loss of or damage to Turlough habitat (incl. constituent vegetative species); a diminution in water quality; or a reduction in the quantity of water draining into the habitats. Having regard to the relevant QI at this SAC site (Turloughs) that has the potential to be affected, and based on the EIAR surveys, and the various DAU (NPWS) data at the time the site was designated, and any more recent survey data, I am satisfied that the proposed development would not have an adverse effect on this QI habitat or the Conservation Objectives for this SAC, relative to its specific Attributes & Targets (incl. Habitat Area & Distribution, Hydrological regime, Soil Type & Nutrient Status, Physical structure, Chemical processes, and Vegetation composition).

	characteristics; ***Vegetation structure***: maintain/restore sward heights & variety; ***Typical species,*** restore typical species; ***Fringing habitats,*** maintain marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations; ***Vegetation structure (woodland)*** maintain appropriate diversity & structure.	
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the windfarm site, and a nearby quarry. There would be no cumulative impacts (water quality & quantity) as a result of in-combination effects, based on my analysis of the site, environs and EIAR survey results. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.		
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.		

Site: Ballynamona Bog & Corkip Lough – Site code: 002330		
Description: bog complex located c.2km E of the S Cluster (Skyvalley), c.6km SE of the N Cluster (Cronin) & c.0.2km SW of the Grid connection; comprises a relatively small portion of what was once a large bog complex; includes areas of high bog, cutover bog & a turlough (Corkip Lough).		
Conservation Objective: To restore the favourable conservation condition of Turloughs in this SAC which is defined by the following list of attributes and targets.		
QI Habitats	**Attributes & Targets**	**Assessment**
Turloughs	***Habitat area***, stable at c.72ha or increasing, subject to natural processes; ***Habitat distribution***, no decline; ***Hydrological regime,*** maintain/restore appropriate natural regime necessary to support the natural structure & functioning of the habitat; ***Soil type,*** maintain variety, area & extent of soil types to support vegetation & biota; ***Soil nutrient status (N&P),*** maintain/restore status appropriate to soil types & vegetation communities; ***Physical structure,*** maintain sufficient wet bare ground; ***Chemical processes,*** maintain appropriate calcium carbonate deposition rate & concentration in soil; ***Water quality,*** maintain appropriate water quality to support the natural habitat structure & functioning; ***Active peat formation***, restore active peat formation; ***Vegetation composition (communities)***, maintain area of sensitive & high conservation value; ***Vegetation composition (zonation)***, maintain vegetation zonation/mosaic characteristics; ***Vegetation structure***: maintain sward heights & variety; ***Typical***	Having regard to the habitat characteristics the position of Corkip Lough within the W section of the SAC, along with the intervening separation distances with the nearest project elements (T19 & T20), and the nature of the proposed development (incl. the grid connection), there is potential for adverse effects on this groundwater fed Turlough habitat. Refer to EIA Hydrology & Hydrogeology Section 7.8.5 and Biodiversity Section 7.9.5 for a detailed description of ground and surface water movements and assessment of potential effects on this habitat. The referenced sections of the EIA concluded that there would be no significant adverse impacts resulting from: - loss of or damage to Turlough habitat (incl. constituent vegetative species); a diminution in water quality; or a reduction in the quantity of water draining into the habitats. Having regard to the relevant QI at this SAC site (Turloughs) that has the potential to be affected, and based on the EIAR surveys, and the various DAU (NPWS) data at the time the site was designated, and any more recent survey data, I am satisfied that the proposed development would not have an adverse effect on this QI habitat or the Conservation Objectives for this

	species, maintain typical species; ***Fringing habitats,*** maintain marginal fringing habitats that support turlough vegetation, invertebrate, mammal and/or bird populations; ***Vegetation structure (woodland)*** maintain appropriate diversity & structure.	SAC, relative to its specific Attributes & Targets (incl. Habitat Area & Distribution, Hydrological regime, Soil Type & Nutrient Status, Physical structure, Chemical processes, and Vegetation composition).
Active & Degraded Raised Bogs **Depressions on peat substrates** **Bog woodland**		Having regard to the habitat characteristics, elevated location & drainage patterns, & their position within the E section of the SAC, along with the intervening separation distances with the nearest project elements (T19 & T20), and the nature of the project (incl. grid connection), there is no potential for any significant adverse effects on these rain-fed (surface water) QI habitats.
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts as a result of in-combination effects, based on my analysis of the site, environs and EIAR survey results. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.		
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European sites in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.		

Site: Killeglan Grassland SAC – Site code: 002214		
Description: grassland habitat located c.0.5km W of the S Cluster (Skyvalley) & c.5km SW of the N Cluster (Cronin); the site provides an excellent example of the Annex I priority habitat orchid-rich calcareous grasslands; it plays host to an important population of the Red Data Book plant species Green-winged Orchid, and Red Data Book mammals.		
Conservation Objective: To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) in this SAC, which is defined by the following list of attributes and targets.		
QI Habitats & Species	**Attributes & Targets**	**Assessment**
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (orchid sites)	***Habitat area***, stable or increasing, subject to natural processes; ***Habitat distribution***, no decline; ***Vegetation composition***, positive & negative indicator species; ***Vegetation composition,*** non-native species, woody species & bracken; ***Vegetation structure,*** broadleaf herbs, sward height & litter; ***Physical structure***, not more than 10% bare ground & disturbance (grazing).	Refer to EIA Hydrology & Hydrogeology section 7.8.5 and Biodiversity Section 7.9.5 for a detailed description of ground and surface water movements and assessment of potential effects on these habitats and constituent species. The referenced sections of the EIAR concluded that there would be no significant adverse impacts resulting from: - loss of or damage to habitat, a diminution in surface water quality or a reduction in surface water flows to the site. Any potential adverse impacts associated with construction phase dust would be managed by the EIAR & CEMP mitigation measures. Having regard to the relevant QI (and constituent species) at this SAC site that have the potential to be affected, and based on the EIAR surveys, and the various DAU (NPWS) data at the time the site was designated, and any more recent survey data, I am satisfied that the proposed development would not have an adverse effect on the QI habitat (and constituent species) or Conservation Objectives for this SAC site, relative to its specific Attributes & Targets (incl. Habitat Area & Distribution, Vegetation composition

		& structure, and Physical structure).
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts as a result of in-combination effects, based on my analysis of the site, environs and EIAR survey results. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.		
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European sites in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.		

Site: River Shannon Callows SAC – Site code: 000216		
Description: Linear waterbody located c.15km to the E of windfarm site, and 1.3km of the grid connection (Cross River); it has extensive areas of seasonally flooded callow; it is of international importance as it regularly supports over 20,000 wintering waterbirds; mainly composed of lowland wet grassland; different plant communities occur, depending on elevation, and therefore flooding patterns; site holds a population of Annex 11 Otter.		
Conservation Objectives: To maintain the favourable conservation condition of habitats & species in this SAC which is defined by the following list of attributes and targets.		
QI Habitats & Species	**Attributes & Targets**	**Assessment**
Otter	***Distribution***, no significant decline; ***Extent of terrestrial & freshwater (river) habitat,*** no significant decline; ***Couching sites & holts***, no significant decline; ***Fish biomass available***, no significant decline; ***Barriers to connectivity***, no significant decline.	Refer to EIA Hydrology & Hydrogeology section 7.8.5 and Biodiversity Section 7.9.5 for a detailed description of surface water bodies (incl. streams and drainage ditches) and the assessment of potential effects on this mobile species. The referenced sections of the EIAR concluded that there would be no significant adverse impacts on Otter within the windfarm site given the absence of on-site watercourses and drainage ditches in the N and S Clusters. Although the proposed grid connection would traverse several small streams, one of which has an aquatic connection to this SAC via the Cross River (by way of HDD), there would be no adverse effects resulting from: - loss of or damage to commuting habitat, a diminution in water quality (subject to mitigation), or reduced availability of prey species. Having regard to the relevant QI at this SAC site (Otter) that has the potential to be affected, and based on the EIAR surveys, and the various DAU (NPWS) data at the time the SAC site was designated, and any more recent survey data, I am satisfied that the proposed development (incl. the grid connection) would not have an adverse effect on this QI species or Conservation Objective for this SAC site, relative to its specific Attributes & Targets (incl. Distribution, Extent of habitat, Couching sites

		& holts, Fish biomass availability, or Barriers to connectivity).
Molinia & Lowland hay meadows **Alkaline fens** **Alluvial forests** **Limestone pavements**		Having regard to the specific habitat characteristics along with the substantial intervening separation distances with the N and S Clusters, and the nature of the proposed development, there is no potential for any significant adverse effects on these QI habitats.
In-combination effects: There are three small operational and permitted windfarms within a 20km radius of the site, and a nearby quarry. There would be no cumulative impacts or barriers to movement as a result of in-combination effects, based on my analysis of the site, environs and EIAR survey results. Given the lack on any significant local impacts, it is unlikely that the windfarm would contribute to cumulative impacts in the wider area in combination with other plans and projects.		
Conclusion: The proposed development individually or in-combination with other plans or projects would not adversely affect the integrity of this European site in light of its Conservation Objectives, subject to the implementation of mitigation measures outlined above, and any recommended conditions.		

Conclusion:

I concur with the conclusions reached in the NIS that the proposed windfarm development (incl. grid connections, delivery & haul routes) will have no significant adverse effects (direct, indirect or in-combination) on the Conservation Objectives, Qualifying Interests or Special Conservation Interests for the aforementioned European sites (SPAs & SACs) or for any other European Site.

8.5 Appropriate Assessment conclusion:

I consider it reasonable to conclude on the basis of the information on the file, which I consider adequate in order to carry out a Stage 2 Appropriate Assessment, that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the following European sites, any other European site, in view of the site's Conservation Objectives.

- River Suck Callows SPA – Site code: 004097
- Lough Croan Turlough SPA - Site Code: 004139
- Four Roads Turlough SPA - 004140
- Middle Shannon Callows SPA – Site code: 004096
- Lough Ree SPA – Site code: 004064
- Four Roads Turlough SAC – Site code: 001637
- Ballynamona Bog & Corkip Lough – Site code: 002330
- Killeglan Grassland SAC – Site code: 002214
- River Shannon Callows SAC – Site code: 000216

9.0 RECOMMENDATION

I recommend that planning permission should be granted for the proposed development for the reasons and considerations set down below, subject to compliance with the attached conditions and in accordance with the following Draft Order.

Reasons and considerations

Having regard to:

a. The National Planning Framework – Ireland 2040,
b. The Climate Action Plan, 2023,
c. Climate Action and Low Carbon Development (Amendment) Act, 2021,
d. National Biodiversity Action Plan, 2022,
e. National Landscape Strategy for Ireland, 2015-2025,
f. The Planning System and Flood Risk Management, 2009,
g. The Regional Spatial & Economic Strategy for the North and West Region, 2020,
h. the "Wind Energy Development Guidelines - Guidelines for Planning Authorities", issued by the Department of the Environment, Heritage and Local Government in June 2006 (Draft Amendments, 2019),
i. the policies of the planning authority as set out in the Roscommon County Development Plan, 2022 to 2028,
j. the distance to dwellings or other sensitive receptors,
k. the submissions made in connection with the planning application,
l. 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, and
m. the report and recommendation of the Inspector.

Proper planning and sustainable development:

It is considered that subject to compliance with the conditions set out below the proposed development would accord with European, national, regional and local planning, renewable energy, other and related policy, it would not have an unacceptable impact on the landscape or ecology, it would not seriously injure the visual or residential amenities of the area or of property in the vicinity, and it would be acceptable in terms of traffic safety and convenience. The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

Appropriate Assessment:

The Board agreed with the screening assessment and conclusion carried out in the Inspector's report that the following European sites are the only sites for which there is a possibility of significant effects and must therefore be subject to Appropriate Assessment: -

- River Suck Callows SPA – Site code: 004097
- Lough Croan Turlough SPA - Site Code: 004139
- Four Roads Turlough SPA - 004140
- Middle Shannon Callows SPA – Site code: 004096
- Lough Ree SPA – Site code: 004064
- Four Roads Turlough SAC – Site code: 001637
- Ballynamona Bog & Corkip Lough – Site code: 002330
- Killeglan Grassland SAC – Site code: 002214
- River Shannon Callows SAC – Site code: 000216

The Board considered the Natura Impact Statement and all other relevant submissions and carried out an appropriate assessment of the implications of the proposed development for European Sites in view of the site's Conservation Objectives for these SACs and SPAs. The Board considered that the information before it was sufficient to undertake a complete assessment of all aspects of the proposed development in relation to the site's conservation objectives using the best available scientific knowledge in the field.

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

(i) Site Specific Conservation Objectives for these European Sites,

(ii) Current conservation status, threats and pressures on the qualifying interest / special conservation interest features,

(iii) likely direct and indirect impacts arising from the proposed development both individually or in combination with other plans or projects,

(iv) view of the Department of Arts, Heritage and the Gaeltacht,

(v) mitigation measures which are included as part of the current proposal,

In completing the AA, the Board accepted and adopted the Appropriate Assessment carried out in the Inspector's report in respect of the implications of the proposed development on the integrity of the aforementioned European Sites, having regard to the site's Conservation Objectives.

In overall conclusion, the Board was satisfied that the proposed development would not adversely affect the integrity of European sites in view of the site's Conservation Objectives and there is no reasonable scientific doubt as to the absence of such effects.

Environmental Impact Assessment:

The Board completed an environmental impact assessment of the proposed development taking account of:

(a) the nature, scale, location and extent of the proposed development on a site,

(b) the Environmental Impact Assessment Report (EIAR) and associated documentation submitted in support of the application,

(c) the report of the planning authority,

(d) the submissions received from the prescribed bodies,

(e) the submissions received from the Observers, and

(f) the Inspector's report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment. The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the application. The Board considered that the main significant direct and indirect effects of the proposed development on the environment are, and would be mitigated, as follows:

- Noise, vibration, dust and shadow flicker during the construction and/or the operational phases would be avoided by the implementation of the measures set out in the Environmental Impact Assessment Report (EIAR) and the Construction and Environment Management Plan (CEMP) which include specific provisions relating to the control of dust, noise and shadow flicker.
- The risk of soil instability and soil erosion during the construction and operational phases which would be mitigated by the implementation of measures set out in the Environmental Impact Assessment Report (EIAR) and the Construction and Environment Management Plan (CEMP) which include specific provisions relating to spoil management.
- The risk of pollution of ground and surface waters during the construction phase which would be mitigated by the implementation of measures set out in the Environmental Impact Assessment Report (EIAR), Drainage Management Plan and the Construction and Environment Management Plan (CEMP) which include specific provisions relating to groundwater and surface water drainage.
- Biodiversity impacts, including on habitats, mammals, birds, bats, fisheries, invertebrates, and plant species would be mitigated by the implementation of specific mitigation to protect mammals, birds, bats, fisheries, invertebrates and plant species, during the construction and/or operational phases, and the measures set out in the Biodiversity Mitigation and Enhancement Plan.

- The increase in vehicle movements and resulting traffic during the construction phase would be mitigated by the upgraded site access, the preparation of a Construction Traffic Management Plan.
- Landscape and visual impacts would arise during the operational phase from the insertion of the turbines and met mast into an rural setting, the location and siting of which would assist in assimilating the works into the landscape.
- The impact on cultural heritage would be mitigated by archaeological monitoring with provision made for resolution of any archaeological features or deposits that may be identified.
- Positive environmental impacts would arise during the operational phase from the generation of renewable energy.

The Board completed an environmental impact assessment in relation to the proposed development and concluded that, subject to the implementation of the mitigation measures proposed as set out in the EIAR, and subject to compliance with the conditions set out below, the effects of the proposed development on the environment, by itself and in combination with other plans and projects in the vicinity, would be acceptable. In doing so, the Board adopted the report and conclusions of the Inspector.

10.0 CONDITIONS

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the application, including the further information received by the Board on the 31st day of March 2023 and the 10th day of July 2023, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to commencement of development and the development shall be carried out and completed in accordance with the agreed particulars.
   Reason: In the interest of clarity.

2. The period during which the development hereby permitted is constructed shall be 10 years from the date of this order.
   Reason: In the interests of clarity.

3. This permission shall be for a period of 30 years from the date of the first commissioning of the wind farm.
   Reason: To enable the planning authority to review its operation in the light of the circumstances then prevailing.

4. The design and layout of the development shall be amended to omit the three wind turbines (T9, T10 and T12) which would be located within the Killeglan Karst Landscape in the Southern Turbine Cluster. The Killeglan Karst Landscape is a County Geological Heritage site of National Importance, and Policy NF10.11 of the Roscommon County Development Plan, 2022 to 2028 seeks to preserve and protect sites of county geological importance from inappropriate development where they comprise designated sites or national heritage areas.
   Reason: To protect the visual integrity and geological heritage of the area.

5. The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Assessment Report, Natura Impact Statement, Further Information response submission and all associated documentation, including the Biodiversity Mitigation and Enhancement Plan (BMEP) and associated Farm Plan, are implemented in full, save as may be required by conditions set out below.
   Reason: In the interest of protection of the environment.

6. The developer shall ensure that all soil and water quality related mitigation measures are implemented in full and monitored throughout the life cycle of the construction works and monitored throughout the operational phase, the excavation works for the turbine foundations and on-site spoil depositories should avoid incursion into the underlying bedrock, and where this cannot be locally avoided, excavations work shall not extend below or to within 2 metres of the winter water table level.
   Reason: To protect groundwater in the area, public water supplies, and the quality and quantity of water in the surrounding interconnected turloughs.

7. The following design requirements shall be complied with: -
   (a) The wind turbines will have a maximum tip height of 180 metres and a maximum rotor diameter 162m.
   (b) Final details of the turbine design along with details of colouring, shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.
   (c) Cables within the site shall be laid underground.
   (d) The wind turbines shall be geared to ensure that the blades rotate in the same direction.
   (e) No advertising material shall be placed on or otherwise be affixed to any structure on the site without a prior grant of planning permission.
   Reason: In the interest of visual amenity.

8. The operation of the proposed development, by itself or in combination with any other permitted wind energy development, shall not result in noise levels, when measured externally at nearby noise sensitive locations, which exceed:

   (a) Between the hours of 7am and 11pm:

      i. the greater of 5 dB(A) $L_{90,10min}$ above background noise levels, or 45 dB(A) $L_{90,10min}$, at wind speeds of 5m/s or greater

      ii. 40 dB(A) $L_{90,10min}$ at all other wind speeds

   (b) 43 dB(A) $L_{90,10min}$ at all other times

   where wind speeds are measured at 10m above ground level.

   Prior to commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring programme for the subject development, including any mitigation measures such as the de-rating of particular turbines. All noise measurements shall be carried out in accordance with ISO Recommendation R 1996 “Assessment of Noise with Respect to Community Response,” as amended by ISO Recommendations R 1996-1. The results of the initial noise compliance monitoring shall be submitted to, and agreed in writing with, the planning authority within six months of commissioning of the wind farm.

   Reason: In the interest of residential amenity.

9. The following shadow flicker requirements shall be complied with:

   (a) Cumulative shadow flicker arising from the proposed development shall not exceed 30 minutes in any day or 30 hours in any year at any dwelling.

   (b) The proposed turbines shall be fitted with appropriate equipment and software to control shadow flicker at dwellings.

   (c) Prior to commencement of construction, a wind farm shadow flicker monitoring programme shall be prepared by a consultant with experience of similar monitoring work, in accordance with details to be submitted to the planning authority for written agreement. Details of monitoring programme shall include the proposed monitoring equipment and methodology to be used, and the reporting schedule.

   Reason: In the interest of residential amenity.

10. The developer shall retain the services of a suitably qualified and experienced Ecologist to undertake pre-construction surveys at the various project elements, immediately prior to commencing work in order to check for the presence of protected and sensitive species in the vicinity (incl. badgers, otters, nesting birds, bats and plants). A 500m to 700m buffer should be placed around any protected bird species nest sites and maintained free from construction works until the nest is vacated. Bridges along the grid connection route shall be examined for the presence roosting bats. Derogation Licences shall be obtained for the removal of any Bat roost or Otter holts.
    Reason: In the interest of protecting ecology and wildlife in the area.

11. The developer shall comply with the following additional nature conservation requirements: -
    (a) No hedgerow felling or vegetation removal shall take place during the bird breeding period between 1st March and 31st August.
    (b) Replacement hedgerow planting shall comprise indigenous Irish hedgerow species and progress shall be monitored on an annual basis until the hedgerows reach maturity.
    (c) A 5m buffer zones shall be installed around Autumn Lady's Tresses orchid sites for the duration of the construction works.
    Reason: In the interest of biodiversity and nature conservation.

12. The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate annual bird surveys of this site. Details of the surveys to be undertaken and associated reporting requirements shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development. These reports shall be submitted on an agreed date annually for five years, with the prior written agreement of the planning authority. Copies of the reports shall be sent to the Department of Arts, Heritage and the Gaeltacht
    Reason: To ensure appropriate monitoring of the impact of the development on the avifauna of the area.

13. The developer shall implement mitigation measures to lessen the potential for bat fatalities arising from collision with rotating turbine blades which shall include Feathering or pitching the blades out of the wind, and Curtailment between mid-April to mid-October, between sunset and sunrise, at certain windspeeds and temperatures. Details of the Curtailment shall be developed following consultation with, and agreed in writing with, the planning authority prior to commencement of development, and post construction monitoring shall be undertaken. Any destruction of bat roosting sites or relocation of bat species shall be carried out by a suitably qualified ecologist under a Derogation Licence granted by the Minister for Housing, Local Government and Heritage.
Reason: To ensure appropriate monitoring of the impact of the development on the bat species of the area.

14. The developer shall implement mitigation measures to lessen the potential for impacts on Badgers arising from the excavation and construction works: -
    (a) A 30m cordon shall be installed around any badger sett entrances, which shall be screened and remain in place throughout the construction works,
    (b) There shall be no artificial lighting of any badger sett entrances during the construction and operational phases,
    (c) During the breeding season, no works shall take place within 50m of the sett for general construction and 150m for noisy and vibratory activities, and
    (d) The built-in construction design shall allow for escape from trenches.

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

15. The developer shall implement mitigation measures to lessen the potential for adverse impacts on the Castlesampson Esker, a geological and geo-heritage site of national importance, which is located close to the southern boundary of the Southern Turbine Cluster. The area around the northern tip of the esker shall be cordoned off for the duration of the construction works, and no storage of materials, plant or vehicles should be permitted in the vicinity. The width of the internal roads and access tracks shall be kept to a minimum and not significantly exceed the width of the existing unpaved farm tracks in the vicinity of the esker deposits.
    Reason: To protect the geological heritage of the area.

16. The preservation, recording and protection of archaeological materials or features that may exist within the site shall be facilitated. In this regard, a suitably qualified archaeologist shall be retained to monitor all site investigations and other excavation works and provide arrangements for the recording and for the removal of any archaeological material considered appropriate to remove.
    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.

17. The construction of the development shall be managed in accordance with a Construction and Environmental Management Plan, which shall be finalised prior to commencement of development. This plan shall provide details of intended construction practice for the development, including hours of working, noise, vibration, dust monitoring and management measures, traffic management, an invasive species management plan, and off-site disposal of construction and excavation waste. A construction noise management plan and a contingency plan for remedial action shall be prepared in the event that monitoring levels indicate an exceedance of limits, before works commence.
    Reason: In the interests of public safety and residential amenity.

18. Prior to commencement of development, a transport management plan for the construction stage shall be submitted to, and agreed in writing with, the planning authority. The traffic management plan shall incorporate details of the road network to be used by construction traffic, including over-sized loads, and detailed arrangements for the protection of roads, bridges, culverts or other structures to be traversed, as may be required. The plan should also contain details of how the developer intends to engage with and notify the local community in advance of the delivery of oversized loads. Any works, including reinstatement works, works to existing junctions on the national road network, and grid connection cable excavations under the national road network shall comply with Transport Infrastructure Ireland (TII) standards as outlined in TII Publications, County Council roads requirements, and shall be subject to Road Safety Audit as appropriate.
    Reason: In the interest of traffic safety and the proper planning and sustainable development of the area.

19. The developer shall prepare an Invasive Species Management Plan for the written agreement of the planning authority and all plant and machinery used during the works should be thoroughly cleaned and washed before delivery to the site to prevent the spread of hazardous invasive species and pathogens.
    Reason: In the interest of the proper planning and sustainable development of the area.

20. The construction and future decommissioning and works shall be limited between 08.00-hours and 18.00-hours Monday to Saturday excluding Bank Holidays.
    Reason: To protect the amenities of nearby residential properties.

21. Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as constructed tip heights and co-ordinates of the turbines and wind monitoring masts.
    Reason: In the interest of air traffic safety.

22. In the event that the proposed development causes interference with telecommunications signals, effective measures shall be introduced to minimise interference with telecommunications signals in the area. Details of these measures, which shall be at the developer's expense, shall be submitted to, and agreed in writing with, the planning authority prior to commissioning of the turbines and following consultation with the relevant authorities.
Reason: In the interest of protecting telecommunications signals and of residential amenity.

23. 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 wind monitoring mast, the turbines concerned and all decommissioned structures shall be removed, and foundations covered with soil to facilitate re-vegetation, all to be complete to the written satisfaction of the planning authority within three months of decommissioning or cessation of operation.
Reason: To ensure satisfactory reinstatement of the site upon full or partial cessation of the project.

24. Prior to the commencement of development, the community gain proposals shall be submitted to planning authority for their written agreement.
Reason: In the interest of the proper planning and sustainable development of the area.

25. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to planning authority, to secure the satisfactory reinstatement of the site and delivery route upon cessation of the project, coupled with an agreement empowering the planning authorities to apply such security or part thereof to such reinstatement. The form and amount of the security shall be as agreed between the planning authorities and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.
Reason: To ensure satisfactory reinstatement of the site.

26. The developer shall pay to the planning authority a financial contribution in respect of public infrastructure and facilities benefiting development in the area of the planning authority that is provided or intended to be provided by or on behalf of the authority in accordance with the terms of the Development Contribution Scheme made under section 48 of the Planning and Development Act 2000. The contribution shall be paid prior to the commencement of development or in such phased payments as the planning authorities may facilitate and shall be subject to any applicable indexation provisions of the Scheme at the time of payment. Details of the application of the terms of the Scheme shall be agreed between the planning authorities 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 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.

11. Professional Declaration

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.

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Karla Mc Bride
Senior Planning Inspector
29th September 2023