
CONSTANT ENERGY LIMITED

TIRAWLEY WIND FARM CO. MAYO

VOLUME I NON-TECHNICAL SUMMARY (NTS)

April 2026

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CONSTANT ENERGY LIMITED
TIRAWLEY WIND FARM, CO. MAYO
VOLUME I
NON-TECHNICAL SUMMARY REPORT
CONTENTS

1	INTRODUCTION	1
2	ENVIRONMENTAL IMPACT ASSESSMENT (EIA).....	4
3	PROPOSAL FOR THE TIRAWLEY WINDFARM	6
3.1	Wind Turbines.....	8
3.2	Site Access and Turbine Delivery Route (TDR)	9
3.3	Grid Connection Route (GCR)	15
3.4	Construction Phase	17
3.5	Site Restoration	18
3.6	Operational Phase	18
4	SITE SELECTION AND DESIGN.....	19
5	LEGAL AND POLICY FRAMEWORK	19
6	POPULATION AND HUMAN HEALTH	21
7	BIODIVERSITY.....	22
8	ORNITHOLOGY	26
9	LAND, SOILS & GEOLOGY.....	28
10	HYDROLOGY, HYDROGEOLOGY.....	31
11	AIR AND CLIMATE.....	34
12	NOISE	36
13	LANDSCAPE AND VISUAL	37
14	SHADOW FLICKER & EMI	40
15	CULTURAL HERITAGE.....	41
16	MATERIAL ASSETS AND OTHER ISSUES	43
16.1	Land Use - Agriculture	43
16.2	Land Use - Forestry	44
16.3	Telecommunications.....	45
16.4	Electricity Networks	46
16.5	Air Navigation	47
16.6	Utilities (gas, water, waste).....	48
16.7	Quarries.....	49
17	ACCESS, TRAFFIC AND TRANSPORT	49
18	INTERACTIONS OF THE FOREGOING.....	50

1 **INTRODUCTION**

This Non-Technical Summary (NTS) summarises the Environmental Impact Assessment Report (EIAR) which accompanies the application for planning permission for Tirawley Wind Farm. The Wind Farm Site, as shown in Figure NTS-1, is located ~14.5 km northwest of Ballina Town, ~5.2 km northwest of the village of Killala and ~4 km east of Ballycastle village in north Co. Mayo. The Wind Farm Site is located ~10.5 km east of the county border between Mayo and Sligo. The Wind Farm Site has a total area of ~108.06 ha. Wind Farm Site is comprised of blanket bog, coniferous forestry, transitional woodland scrub and agricultural pastures. Land cover at the Wind Farm Site is mapped by Corine (2018) as inland wetland peat bogs, with some smaller areas of coniferous forestry, semi natural areas and agricultural pastures (www.epa.ie). The location of the Proposed Development is shown in **Figure NTS-1**.

Constant Energy Limited (referred to as 'the Developer'), is an Irish company based in Limerick, are seeking to develop and operate an energy portfolio with an emphasis on renewable energy and gas fuelled energy production and thus contribute to the security, reliability, and sustainability of an Irish energy system. Constant Energy's strategy to achieve this vision is to develop an energy portfolio of Wind Farms, Hydrogen Production Plants, Open Cycle Gas Turbine Power Generation and Solar Farms.

Planning Permission is being sought by the Developer for the construction of 16 No. Wind Turbines with an anticipated output of 68.8 MW, 1 no. meteorological mast, a Permanent Operations Compound, an Onsite Substation, Battery Energy Storage System (BESS), 17 no. Spoil Deposition Areas and all ancillary works, works along the Turbine Delivery Route (TDR) and the construction of an underground Grid Connection to Tawnaghmore 110 kV substation, Killala Business Park, Co. Mayo. The Site layout is shown in **Figure NTS-2**.

A 10-year planning permission and 35-year operational life from the date of commissioning of the entire Wind Farm (apart from the substation) is being sought. However, part of the substation and all of the grid connection will be handed over to EirGrid networks to own and operate. As part of the national grid infrastructure, their life can extend beyond the life of the wind farm. Accordingly, permission is sought for the grid connection and substation in perpetuity.

The EIAR assesses the Project which includes the Proposed Development as outlined above; it includes improvements and temporary accommodation requirements to the existing public road infrastructure to facilitate delivery of abnormal loads and turbine delivery.

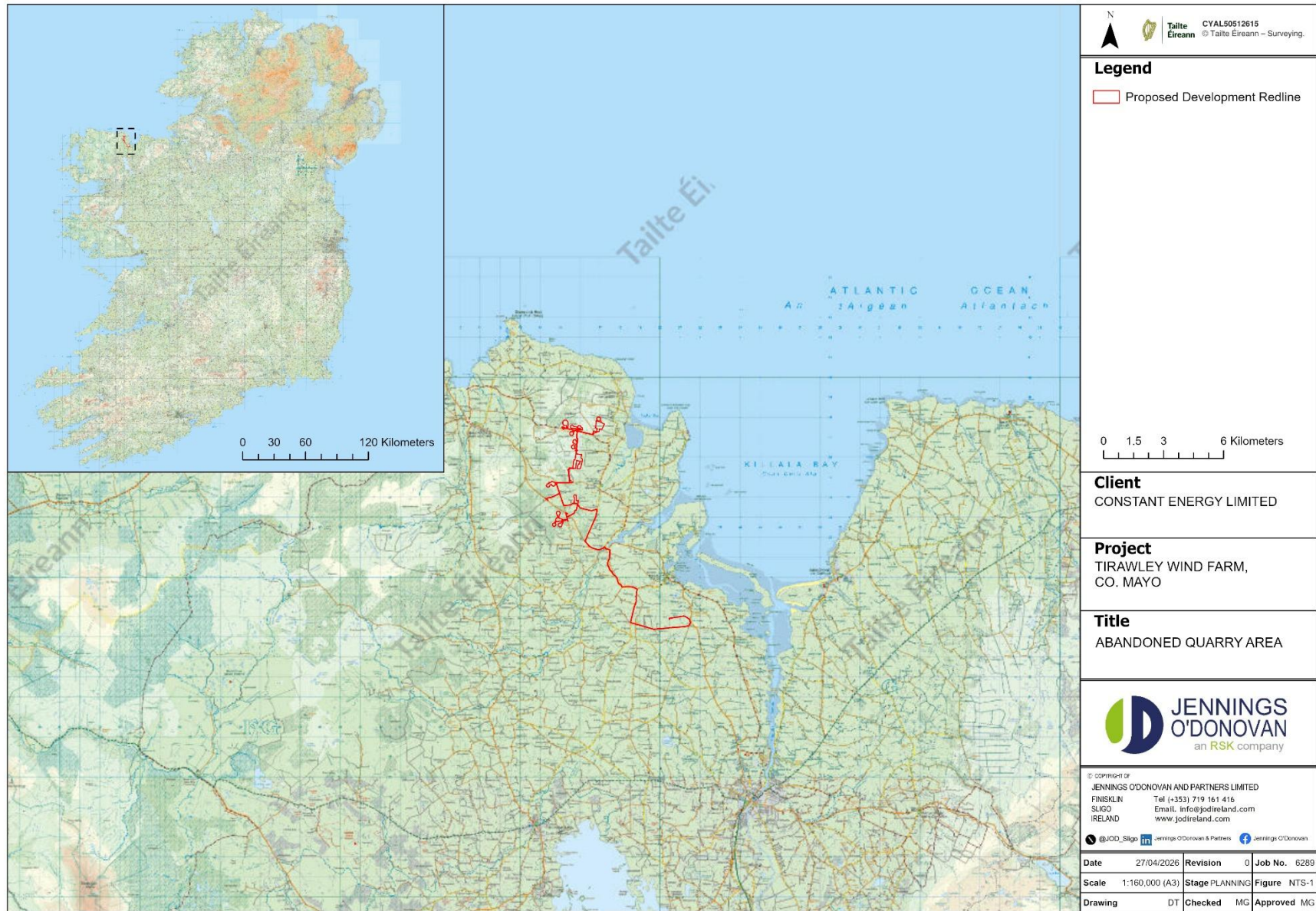


Figure NTS-1: Site Location Map



Figure NTS-2: Site Layout Map

The EIAR presents information on the identification and assessment of the potential significant environmental effects of the Project and reports the findings of the Environmental Impact Assessment (EIA) which has been undertaken in accordance with the Planning and Development Act 2000, as amended (PDA 2000), and the Planning and Development Regulations 2001, as amended (the Planning Regulations 2001) together the EIA Planning Regulations. The EIAR comprises the following documents:

- This Non-Technical Summary (**Volume I**)
- The Main EIAR Report (**Volume II**)
- Supporting Figures and Drawings (**Volume III**)
- Supporting Appendices (**Volume IV**)
- Natura Impact Statement (NIS) (**Volume VI**)

These documents inform readers of the nature of the Proposed Development, likely environmental effects and measures proposed to protect the environment during each phase of the Proposed Development.

The Proposed Development will comprise the following phases:

- Construction of the Proposed Development
- Operation of the Proposed Development
- Decommissioning of the Proposed Development

Common defined terms used throughout the NTS and EIAR are summarised in **Table 1.1** of **Chapter 1** of the EIAR.

2 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

An EIA is required where there are likely to be significant effects on the environment due to the nature, size, or location of a new development. Windfarms of the scale of the Proposed Development typically legally require an EIA to be carried out.

This EIAR has been prepared following a systematic approach to an EIA and project design, with knowledge of the potential effects being used to change the design so as to reduce those effects. The main EIA stages are:

- Scoping consultation (process of asking relevant organisations what they think should be included in the EIA) and how these topics are addressed
- Technical environmental assessments - baseline studies (understanding what the existing environmental conditions are), asking what potential significant environmental effects might occur, informing the design evolution and identification of measures to reduce undesirable effects

- Writing up the findings to include in the EIAR
- Submission of the planning application and EIAR

Scoping and Community Engagement

Scoping and pre-application consultation is important to the development of a comprehensive and balanced EIAR. Requests for Scoping Opinions were submitted to the prescribed statutory bodies and key consultees in initially in March 2023, with rescoping of the final layout carried out in December 2025. The request was accompanied by a Scoping Letter which included a Description of the Proposed Development, a Site Location Map, a Site Layout Map, a Proposed Grid Connection Route Map and an outline of the baseline environment and proposed methodology for the various proposed assessments for the EIAR. Scoping Opinions received are included as **EIAR Appendix 1.3**.

Constant Energy Limited had direct public consultations with the residents in the area. This took the form of door-to-door contact with the local residents in the vicinity of the Proposed Development. With the aid of a local representative, Constant Energy Ltd also reached out to local community groups and third parties associated and/or interested in the Proposed Development.

In advance of the Public Information Day, notices were advertised in the local newspaper and local community groups were notified via word of mouth and social media messaging platforms. Prior to the PID, door to door liaising with landowners involved in the Proposed Development took place. This was informal discussions with the client and landowners. The PID took place at the Ballina Manor Hotel, Ballina Town on Tuesday 6th June 2023 from 14:00 - 19:00 as part of the Public Consultation process for the Proposed Development. The Community Engagement Report is included as **EIAR Appendix 1.6**.

Environmental effects have been assessed in chapters of the EIAR, broadly with one chapter per technical discipline, generally representing a type of receptor of potential effects (e.g., birds). The assessments in each chapter follow a similar, systematic approach, to identify any effects that may be significant in the context of the EIA Planning Regulations. The approach includes establishing the “baseline”, this being the current state of the environment, to which the Proposed Development will be added. This identifies the key receptors, including how sensitive they are to the sort of change that might be caused by the Proposed Development. The potential size (or magnitude) of change caused by the Proposed Development is then assessed, and the sensitivity and magnitude are considered together to form a conclusion on significance. Effects can be desirable (or “positive”, or

“beneficial”), or undesirable (or “negative”, or “adverse”). Mitigation is proposed where possible to prevent significant undesirable effects. The final proposed effects are those after mitigation has been applied and are the “residual effects”.

In accordance with the EIA Planning Regulations, the assessment has considered 'cumulative effects'. These are effects that result from cumulative changes caused by past, present or reasonably foreseeable actions together with the Proposed Development.

3 PROPOSAL FOR THE TIRAWLEY WINDFARM

The Proposed Development will consist of the following:

- Construction of 16 no. Vestas V117 (4.3 MW) IEC IIA – T wind turbines. This specific model with a blade tip height of 135 m, was selected as the candidate turbine and its associated parameters were used to determine the significant environmental effects associated with the Proposed Development. No flexibility in terms of turbines dimensions is sought as part of the application for Planning Permission
- Construction of permanent Turbine Hardstands and Turbine Foundations
- Change the use of a residential site and vacant dwelling to a Permanent Operations Compound consisting of an operations office, storage area and staff parking
- Construction of two Temporary Construction Compounds with associated temporary site offices, parking areas and security fencing
- Installation of 1 no. (35-year life cycle) meteorological mast with a height of up to 80 m and a 4 m lightning pole on top
- Development of 17 no. permanent onsite spoil deposition areas
- Construct 5 no. new permanent site entrances. The locations of each of these entrances are detailed in **Figure NTS-3**.
- Upgrade 9 no. existing site entrances. The locations of each of these entrances are detailed in **Figure NTS-3**.
- Works for new and upgraded entrances include clearing visibility splays of vegetation, widening the entrances to allow HGVs turn onto local public roads and the R314, excavation to solid formation level, installation roadside drainage features, placing entrance sub-base with rockfill materials, placing capping level and providing surface dressing where necessary.
- Road construction works within the Wind Farm Site consisting of the construction of approximately 9.64 km of new Site Access Tracks through the Wind Farm Site. The upgrading of 1.76 km of private Access Tracks and 1.58 km of public roads within the Wind Farm Site, road verge widening, hedge trimming and all associated infrastructure and drainage works.

- Forestry felling of approximately 31.86 ha of coniferous forest will be required to facilitate the construction of the Proposed Development. For the purposes of this Proposed Development, the Developer commits that the location of any replanting (alternative afforestation) associated with the Proposed Development will be greater than 10 km from the Wind Farm Site and also outside any potential hydrological pathways of connectivity i.e. outside the catchment within which the Proposed Development is located. The extent of felling required to be licensed for the purpose of giving effect to the Proposed Development can only be determined once planning permission for the Proposed Development has been granted. It will be a condition of the felling licence that an equivalent area of land required to be felled shall be replanted. The felling will be subject to a separate planning application which, in practical terms, can only be made once planning permission for the Proposed Development has been granted.
- All associated site development works including berms, landscaping, and soil excavation.
- Development of an internal site drainage network and sediment control systems.
- Construction of 1 no. 110 kV electrical substation including 2 no. control buildings with welfare facilities, all associated electrical plant and equipment, security fencing and gates, all associated underground cabling, wastewater holding tank, and all ancillary structures and works (the 'Wind Farm substation').
- Installation of battery arrays located within container units (20 no. units) and associated electrical plant for grid stabilisation adjacent to the Onsite Substation building (with up to 150 MW storage capacity) with surrounding palisade fence 2.65 m in height;
- All associated underground electrical and communications cabling connecting the wind turbines to the Wind Farm substation.
- All works associated with the permanent connection of the Wind Farm to the national electricity grid comprising of a 110 kV underground cable system in permanent cable ducts from the proposed, Wind Farm substation, in the townland of Barroe to the existing Tawnaghmore substation at the Killala Business Park.

A 10-year planning permission and 35-year operational life from the date of commissioning of the entire Wind Farm (apart from the substation) is being sought. However, part of the substation and all of the grid connection will be handed over to EirGrid networks to own and operate. As part of the national grid infrastructure, their life can extend beyond the life of the wind farm. Accordingly, permission is sought for the grid connection and substation in perpetuity.

The EIAR assesses the Project which includes the Proposed Development as outlined above; it includes improvements and temporary accommodation requirements to the existing public road infrastructure to facilitate delivery of abnormal loads and turbine delivery.

3.1 **Wind Turbines**

The proposed wind turbines will be Vestas V117 (4.3 MW) IEC IIA turbine and its associated parameters was used to determine the significance of environmental impacts associated with the Proposed Development. The Vestas V117 (4.3 MW) IEC IIA is pitched blade regulated with variable speed, three-bladed machine. The turbines appearance will be a matt non-reflective finish in a light grey colour (RAL 7035). The max foundation top-to-tip height of the turbine will be 135 m.

The turbine will have a circular based tower, sitting on a reinforced concrete foundation. The tower will support the nacelle, rotor hub, and rotor blades. Commercial wind turbine towers are typically made of steel or a hybrid of steel and concrete. The nacelle is mainly metal (steel, copper, aluminium, etc.) with a metal/plastic/glass-reinforced plastic (GRP) body, while the blades can be made of a matrix of glass-fibre reinforced polyester or wood-epoxy or similar composite materials. The turbine parameters can be seen in **Table 3.1**.

Table 3.1: Turbine Parameters

Turbine Parameter	Assessment Envelope
Turbine Blade Tip Height	135 m
Rotor Diameter	117 m
Hub Height	76.5 m

The turbine will be equipped with Serrated Trailing Edge (STE) technology as standard. This design feature mitigates noise emissions by effectively breaking up turbulence into smaller eddies, reducing the intensity of pressure fluctuations and lowering noise emissions by approximately 2.5 dBA without reducing energy output. Additionally, the turbines have software incorporated so that sound power levels can be reduced, allowing for operation in Sound Optimized Modes (SO1 and SO2) to ensure strict compliance with established noise limits under specific wind conditions.

3.2 Site Access and Turbine Delivery Route (TDR)

There is a total of 14 proposed site entrances associated with the Proposed Development: consisting of 5 no. new site entrances opening out onto public roads and the upgrading of 9 existing entrances and the widening of 1 no. junction located on the R314. Works will include the removal of existing vegetation for visibility splays and widening to facilitate the use of each entrance for the delivery of construction materials and turbines to the Wind Farm Site.

The locations of each of these entrances are detailed in **Figure NTS-3**.

The Turbine Delivery Route and the Construction Haul Routes will utilise Site Entrance 1-14, refer to **Figure NTS-3**.

The site entrances are shown on **Figure NTS-3**.

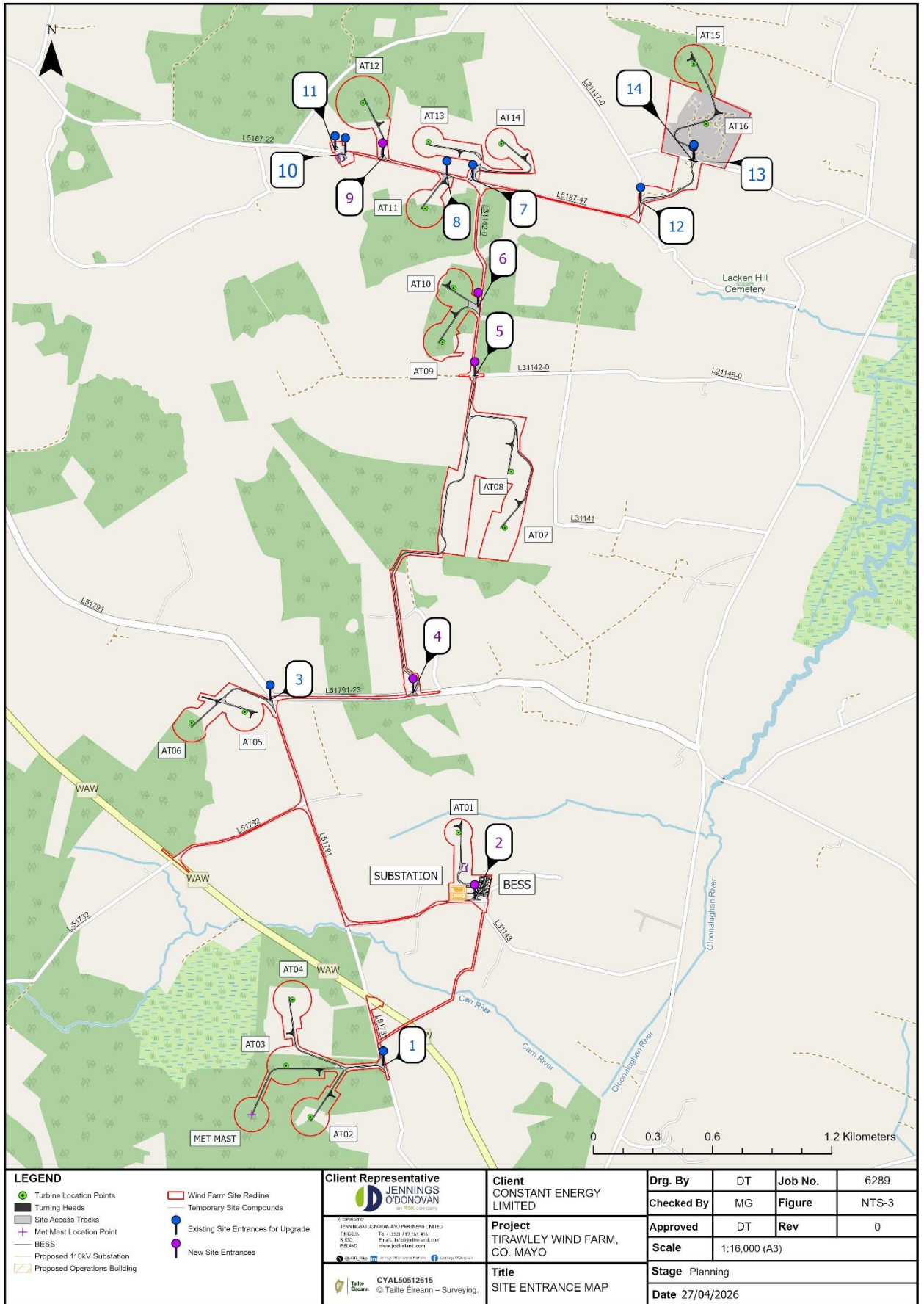


Figure NTS-3: New and Existing Site Entrances

It is proposed that the turbine components including rotor blades, towers, nacelles, hubs and drivetrains will be landed by ship and stored for transportation at the final chosen port/harbour. The EIAR has considered three possible TDRs:

Option 1: It is proposed that turbine nacelles, tower hubs and rotor blades will be landed in Killybegs Port (Donegal). From there, they will be transported to the Wind Farm Site via the R263, N56, N15, N4, N59, L-1141, R294, L-1119, N59, L-1108, R315, L-51722, L-51732 and the R314 as shown on **Figure NTS-4**.

Option 2: It is proposed that turbine nacelles, tower hubs and rotor blades will be landed in Galway Port (Galway). From there, they will be transported to the Wind Farm Site via the R339, R336, N83, N17, N5, L-1331, N5, N58, N26, N59, L-1108, R315, L-51722, L-51732 and the R314 on **Figure NTS-5**.

Option 3: It is proposed that turbine nacelles, tower hubs and rotor blades will be landed in Foynes Port (Limerick). From there, they will be transported to the Wind Farm Site via the N67, N69, N18, M18, M17, N17, N5, L-1331, N5, N58, N26, R294, N59, L-1108, R315, L-51722, L-51732 and the R314 as shown on **Figure NTS-6**.

Delivery of turbines to the Wind Farm Site will require co-ordination with a number of statutory bodies including Transport Infrastructure Ireland (TII) Mayo County Council, and An Garda Síochána.

The EIAR has assessed the above three options with a particular focus on the final leg of the TDR between the Wind Farm Site and the Northern part of Ballina town Co. Mayo.

Figure NTS-4 to NTS-6: Proposed Turbine Delivery Haul Route Options

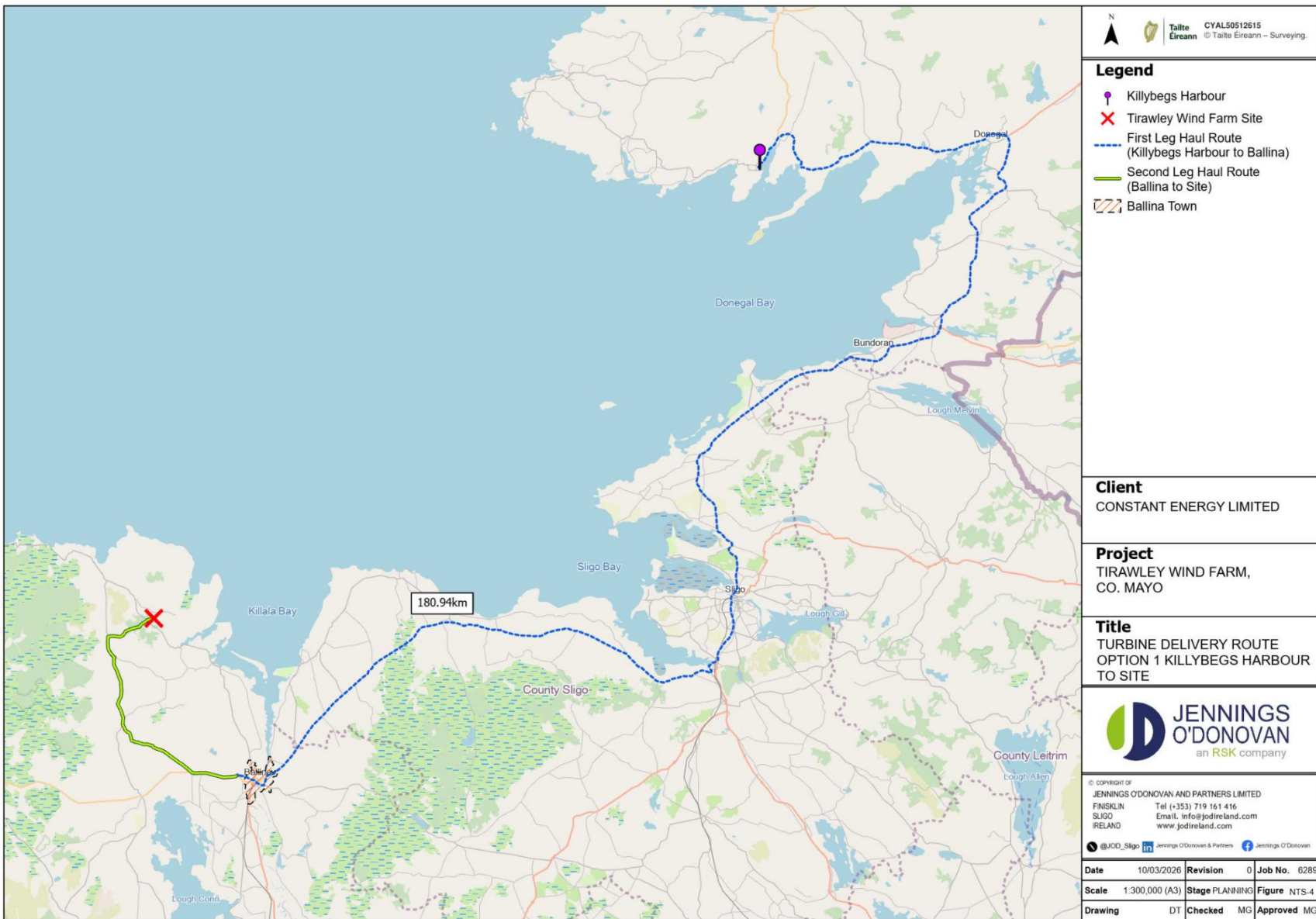


Figure NTS-4: Turbine Delivery Route Option 1 Killybegs Harbour to Site

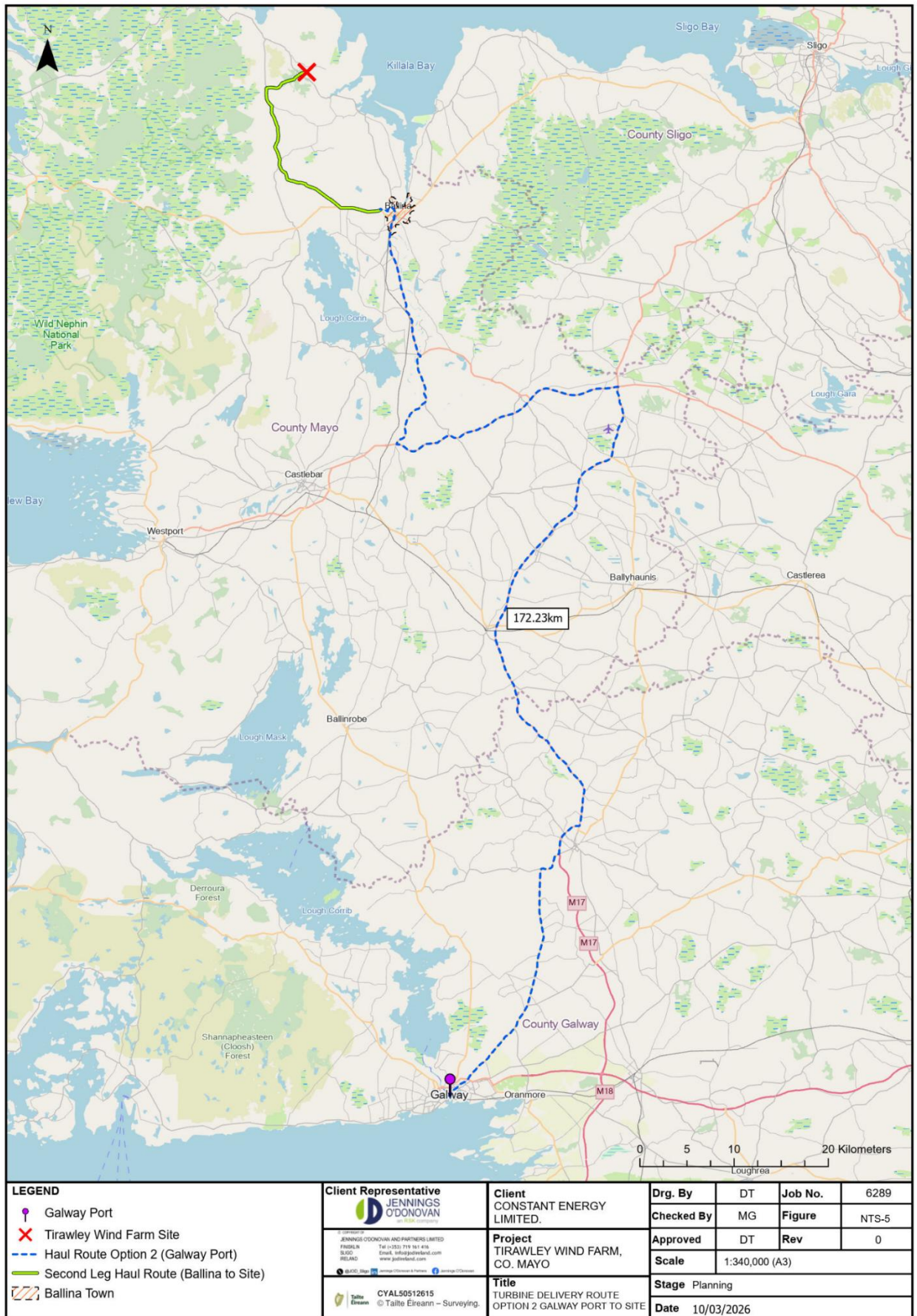


Figure NTS 5: Turbine Delivery Route Option 2 Galway Port to Site

3.3 Grid Connection Route (GCR)

Connection will be sought from the grid system operators by application to EirGrid. The substation will connect via underground 110 kV cable at the existing Tawnaghmore 110 kV substation. The cable will connect into existing infrastructure within the confines of the substation and its compound.

The overall length of the grid connection between the Wind Farm substation and the existing Tawnaghmore 110 kV substation is 13.55 km, of which 12.43 km is located along the public road corridor and 1.12 km is located within the Killala Business Park grounds. The route of the above Grid Connection is provided in **Figure NTS-7**.



Figure NTS-7: Proposed Grid Connection Route

3.4 Construction Phase

The first phase of the Proposed Development will comprise the construction phase. This phase will begin with site preparation works and will be complete when the turbines are built and ready for commissioning, and when all wastes have been removed from the Wind Farm Site. For this Proposed Development, it is envisaged that the construction phase will last approximately 21 months. An indicated construction program is set out at **Table 3.2**.

Table 3.2: Indicative Construction Programme

Activity	Month													
	0-7				7-14				14-21					
Site Establishment/ Felling and Fencing	X	X												
Internal Site Access Track Construction		X	X	X	X									
Substation & Compound Construction				X	X	X	X							
Substation Electrical Works									X	X	X	X	X	X
Substation Commissioning										X				
Excavation & Construction of Turbine Foundations & Hardstands		X	X	X	X	X	X	X	X					
Internal Cabling Installation							X	X	X					
Turbine Delivery and Erection									X	X				
Grid Connection									X	X	X	X	X	
Energisation													X	
Turbine Commissioning													X	X
Site Restoration													X	X

It should be noted that, during the Wind Turbine erection phase, operations will need to take place outside those hours to facilitate Turbine Foundation construction and so that lifting operations are completed safely. Hours of working for Turbine Foundation construction will be agreed with Mayo County Council prior to the commencement of Turbine Foundation construction.

The Developer will appoint a civil contractor who will have overall responsibility for management, including environmental management on the construction site. The civil contractor will ensure that construction activities are carried out in accordance with the mitigation measures outlined in the EIAR and as required by the planning permission, such as the Construction Environmental Management Plan (CEMP) included in **EIAR Appendix**

2.1. The services of specialist advisors will be retained as appropriate, such as an archaeologist and ecologist, to be called on as required to advise on specific environmental issues. An estimated 45 to 63 jobs will be created through the construction phase of the Project.

3.5 **Site Restoration**

The Biodiversity and Enhancement Management Plan (BEMP) is presented in **EIAR Appendix 6.4**. The primary objective of the Plan is to preserve and enhance an area of blanket bog habitat (3.94 ha) to offset the loss of similar habitat (0.68 ha) at the wind turbine AT13 location. The BEMP will also provide mitigation for loss and disturbance to other habitats and species as a result of the Proposed Development.

The Plan area comprises the entire of an abandoned commercial quarry at Castlelackan Demesne other than the ground required to facilitate the AT16 turbine and the Site Access Track. The disused quarry, which is within the north-eastern sector of the Proposed Development site, supports relatively intact blanket bog, as well as tall willow scrub, ponds and various recolonising habitats since the quarrying activities. While a sector of the quarry will be used for peat and soil deposition derived from the Wind Farm construction works, these areas will later be incorporated into the Plan area as meadow grassland and native woodland. Overall, it is anticipated that over time the biodiversity value of the site will increase substantially for habitats and associated flora and fauna species.

The Plan is underwritten by a detailed monitoring programme, which will allow modifications to ensure that the objectives are being achieved.

3.6 **Operational Phase**

The operational lifespan for the Proposed Development is 35-years. During the operational phase, Wind Turbine and infrastructure maintenance will be ongoing and regular. The Proposed Development will create approximately between one and two full-time jobs during the operational phase. In addition to these jobs, various personnel will be required for the successful and continued operation of the Wind Farm Site. During the operational phase of the Proposed Development, the operation and reliability, maintenance (Wind Turbines, civil works and electrical infrastructure) finance, ongoing compliance with permissions and permits, safety, security, community relations and benefits and land-owner agreements must be continually managed. These requirements are widely distributed over various employment sectors and are an integral part of the ongoing operation of the Proposed Development and will provide continuous employment for the lifetime of the Wind Farm Site.

4 SITE SELECTION AND DESIGN

The process of identifying a suitable area for a wind farm is influenced by a number of factors. The key policy, planning and environmental considerations for the selection of a potential Wind Farm Site included:

- Site location relative to Mayo County Council's ('the Council') Renewable Energy Strategy (RES) classification of areas considered suitable for wind farm development;
- Low population density;
- Consistent wind speeds;
- Protection of visual amenity;
- Low potential for impact on designated National and European sites;
- Located outside areas designated for protection of ecological species and habitats;
- Access to the national electricity grid possible within a viable distance; and
- Sufficient area of unconstrained land that could potentially accommodate wind farm development and turbine spacing requirements.

5 LEGAL AND POLICY FRAMEWORK

The Proposed Development has had regard to The National Planning Framework, The Regional Spatial and Economic Strategy (RSES) for The Northern and Western Regional Assembly Area and the Mayo County Development Plan 2022-2028. These documents are relevant to the determination of the planning application by An Coimisiún Pleanála (the Commission). **Chapter 4: Planning Policy** of the EIAR sets out the relevant planning policy and legislative background to the planning application.

In order to facilitate the accelerated deployment of renewable electricity infrastructure and to achieve the national targets outlined in the Climate Action Plan 2025, the National Planning Framework (NPF) 2025 establishes regional renewable energy capacity allocations. These allocations are to be embedded within the Regional Spatial and Economic Strategies (RSES) and the corresponding Regional Renewable Energy Strategies, and subsequently disaggregated into county-level targets to inform the preparation of city and county development plans. The additional renewable power capacity allocation for onshore wind for the Northern and Western Region is 1,389 MW.

Lands classified under the Council's RES's tiered strategic wind energy strategy are considered 'the most appropriate for renewable energy developments'. The definitions of the on-shore wind energy classifications, as per the Mayo Renewable Energy Strategy 2011 – 2022 are outlined below –

- **Priorities Areas** are areas which have secured planning permission and where on-shore wind farms can be developed immediately.
- **Tier 1 – Preferred (Large Wind Farms)** are areas in which the potential for large wind farms is the greatest.
- **Tier 1 – Preferred (Cluster of Turbines)** are areas identified as being most suitable for smaller clusters of wind turbines (clusters of up to three to five turbines depending on site conditions and visual amenities).
- **Tier 2 – Open for Consideration identifies** areas which may be considered for wind farms or small clusters of wind turbines but where the visual impact on sensitive or vulnerable landscapes, listed highly scenic routes, scenic routes, scenic viewing points and scenic routes will be the principal considerations. The Tier 2 classification will be reviewed by the Council following a determination by EirGrid of grid infrastructure for the County.

The final Wind Farm Site layout comprises of a mix of areas classed as Tier 1, Tier 2 and non-designated area. Of the 16 no. turbines, 3 no. turbines are in a 'Tier 1 Preferred Large Windfarms' area, 8 no. turbines are within an area 'Open for Consideration' and 5 no. turbines are on a non-designated area. However, these 5 no. turbines are within 820 m of a designated area.

The Mayo Renewable Energy Strategy (RES) allows for renewable developments on unclassified lands, stating they will be assessed on their individual merits under the principles of proper planning and sustainable development.

The EU produced the Renewable Energy Directive (REDI) 2009/28/EC, to make the EU a global leader in renewable energy and ensure that the target of the final energy consumption being at least 16% renewables by 2020 and 27% renewables are met by 2030. In 2015, the EU set itself a long-term goal of reducing greenhouse gas emissions by 80-95%, when compared to 1990 levels, by 2050. Under the 2009 Renewable Energy Directive (REDI), Ireland committed to produce at least 16% of all energy consumed by 2020 from renewable sources. Ireland did not meet its 2020 target for overall Renewable Energy Share resulting in Ireland being obligated to acquire statistical transfers of 3.3 TWh of renewable energy from other Member States to compensate for this shortfall.

In 2023, the European Union (EU) adopted an amendment of the Renewable Energy Directive, which is referred to as "RED III". RED III obliges Member States to collectively ensure the share of renewable energy in the European Union's gross final energy

consumption is at least 42.5% by 2030, with an additional 2.5% indicative top-up to allow the target of 45% to be achieved.

RED III also places the presumption of imperative reasons of overriding public interest (IROPI) for renewable energy projects on a permanent footing. Article 16f states that Member States must ensure that in the permit-granting procedure, the planning, construction and operation of renewable energy plants, their connection to the grid, the grid itself and storage assets are assumed to be IROPI.

6 **POPULATION AND HUMAN HEALTH**

Chapter 5: Population and Human Health following desk-based collection of data and consultation with local stakeholders. Four geographical Study Areas were outlined for this assessment, namely:

- Study Area 1: The Wind Farm Site and Environs – Electoral Divisions (EDs) Ballycastle, Killala, Lackan North and Lackan South (160.09 km²)
- Study Area 2: Mayo County (5,587 km²)
- Study Area 3: Northern and Western Region Assembly: Cavan, Donegal, Leitrim, Galway, Mayo, Monaghan, Roscommon and Sligo (25,800 km²)
- Study Area 4: The Republic of Ireland (70,273 km²)

Population and Settlement Patterns: The Proposed Development does not contain a housing or services element and is not considered to have any direct positive or negative effect on the local or regional population levels. There is, however, a benefit to the region in terms of the ability to provide a high-quality supply of electricity to industry and business, which may increase employment opportunities and attract companies to County Mayo. While construction workers who are not based locally may temporarily relocate to the region during the initial construction and decommissioning phases, this effect on local population dynamics is considered to be imperceptible. The predicted effect on immediate settlement and social patterns is also slight to non-existent.

During the construction phase, there is potential for short-term, limited effects on residential amenity, primarily relating to an increase in construction traffic, noise, and dust. These effects are defined as slight negative in the construction and decommissioning phases and imperceptible in the operational phase. Overall, the construction phase is predicted to be slight positive and short-term in nature should workers relocate to the area. For the operational phase, the effect is predicted to be slight positive at the local level in terms of settlement patterns where increased business is attracted to the area. No likely adverse significant effects are predicted on population and/or settlement patterns.

Economic activity: The construction phase of the Proposed Development will generate economic effects through expenditure on site preparation, access tracks, and the purchase of materials and equipment. A peak workforce of approximately 45-63 workers is expected, with labor and materials, such as concrete and stone, sourced from the local area where possible. Employment will be created and maintained across local, regional, and international levels throughout the project's lifetime. Additionally, employees during both the construction and operational phases are likely to use local shops, restaurants, and accommodation, resulting in a slight positive effect on employment in the study areas.

The Proposed Development has the potential to bring significant positive benefits to local communities by supporting sustainable employment and contributing annual rates between €770,560 and €908,160 to the local authority. Furthermore, a community benefit fund will be established under the RESS programme, estimated to provide an average of €341,121 per annum to the local community for 15 years. The overall economic effect is predicted to be moderate, positive, and short-term during construction, and moderate, positive, and long-term during the operational phase. No likely adverse significant effects are predicted on economic activity.

Land use: EIAR Chapter 8: Soils and Geology concludes that providing the mitigation measures outlined in this report are fully implemented and best practice is followed onsite, it is expected that effects associated with the development of the Wind Farm Site will not be significant. It is recommended that suitable monitoring programmes are implemented in order to ensure that there is rigid adherence both to the CEMP and to the mitigation measures outlined here during construction, operation and decommissioning of the Wind Farm.

Tourism: It is considered that the Proposed Development with regards to tourism effects are considered to be, short term, slight, negative during construction, operational and decommissioning phases. All other aspects of human health (noise, water, air quality, shadow flicker, telecommunications and traffic) are taken into account under NTS sections for: noise, hydrology and hydrogeology, air quality and climate, shadow flicker, material assets and traffic and transport).

7 BIODIVERSITY

The likely effects on biodiversity associated with the Proposed Development have been assessed in **Chapter 6** of the EIAR.

A detailed understanding of the baseline conditions at the Site has been gained following the collation of desktop information and data sources and ecological field surveys. The ecological field surveys completed at the Site include surveys for habitats, terrestrial mammals, bats and aquatic ecology.

Seven European designated sites occur within a 15 km distance of the proposed wind farm site (these are fully assessed in the AA Screening report and NIS which accompanies the application). The Proposed Development area has hydrological connectivity with two sites, the Lackan Saltmarsh and Kilcummin Head SAC and Killala Bay/Moy Estuary SPA. There are three Natural Heritage Areas (NHAs) within the 15 km radius of the Wind Farm Site, along with a total of ten proposed Natural Heritage Areas (pNHAs).

The proposed Wind Farm site is dominated by agricultural grassland, which varies from Improved or semi-improved agricultural grassland (GA1) to Wet grassland (GS4). Conifer plantation (WD4) is a main habitat in the area and especially in the southwest sector. Hedgerows (WL1) typically form the boundaries of the fields and are often in association with Drainage ditches (FW4). Areas of relatively intact Lowland blanket bog (PB3) occur at the location of wind turbine AT13 at Lackan Hill and also adjoining the abandoned quarry at Castlelackan Demesne (location for AT16). Scrub occurs scattered throughout, with stands of Broadleaved woodland (WD1) occasional. Other habitats which occur over small areas are Disturbed ground (ED) (including abandoned quarry), and Buildings and artificial surfaces (BL3) (including public roads).

While the occurrence of blanket bog, an EU Habitats Directive Annex I listed habitat, within the site of the Proposed Development is of note, the area of bog is rated not more than Local Importance (higher value) as it is a relatively small area (7.65 ha) of shallow bog, which shows signs of past disturbance. No nationally rare or legally protected plant species listed in the 2022 Flora (Protection) Order were recorded from within the Wind Farm Site during the surveys nor are there any past records of such species from the study area.

No invasive species on the Third Schedule list of the European Communities (Birds and Natural Habitats) Regulations 2011-2021 was recorded during the surveys. However, Japanese knotweed has a presence in the general area, with a record from Carrowcor (north of Knockboha Hill) in 2015.

The Wind Farm Site supports a typical mammalian fauna of agricultural pastoral land and coniferous plantation. The Irish hare and all deer species are protected under the Wildlife

Acts, as is the pygmy shrew and hedgehog. While the watercourses within the Wind Farm Site are of low value for otter, the larger stretches of rivers downstream of the site and the coastal fringe support this species. Otter is listed on Annex II of the EU Habitats Directive as amended. All mammal species recorded within the Wind Farm Site, or expected to occur, are listed as 'Least Concern' on the Irish Red List. The common frog and the common lizard are protected under the Wildlife Acts, though both are listed as 'Least Concern' on the Irish Red List.

The bat landscape association model suggests that the locations for the proposed turbines are situated in habitats ranging from moderate low to moderate high suitability for bats. During bat activity surveys, a total of four species were recorded: soprano pipistrelle, common pipistrelle, brown long-eared and Leisler's bat. During static surveys, a total of five species of bats were recorded: soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat and Natterer's bat. Several registrations recorded as *Myotis* species were identified only to genus level. The most commonly recorded species were soprano pipistrelle, followed by Leisler's bat and common pipistrelle, with lower levels from other species. All bats recorded are classified as 'Least Concern' on the Irish Red List (2019) and protected under the EU Habitats Directive as amended Annex IV and Wildlife Acts as amended.

The importance of the watercourses within the area of the Wind Farm Site have been fully assessed. The Wind Farm Site is drained by three river subbasins: Cloonalaghan_010, Gortmore Stream (Mayo)_010, and Knockboha_010. The watercourses on the proposed Wind Farm Site itself are all small – medium 3rd, 2nd, and 1st order streams. These streams are in the upper reaches of the Gortmore Stream (Mayo)_010 and Cloonalaghan_010 sub catchments. These watercourses are of limited aquatic ecological value. However, downstream at the receptor sites where the rivers increase in size fish diversity and habitat quality improves. Many of these watercourses have been identified as being salmonid nursery and spawning areas.

Potential effects that could arise during the Construction, Operation and Decommissioning phases of the Proposed Development are assessed for designated sites and biodiversity interests within the Site and surrounding areas. Where significant adverse effects are identified, mitigation measures in accordance with best practice and guidance shall be implemented to eliminate or reduce the effect.

The strict mitigation measures which will be enforced to maintain water quality in local drains and watercourses during all phases of the Proposed Development will ensure that there will be no significant residual effects on water quality or aquatic habitats or species, including otter and salmonid fish species. The implementation of these measures will also ensure that there will be no likely significant effects on identified designated sites with hydrological connectivity with the Proposed Development site.

While the Proposed Development will result in the loss of approximately 0.68 ha of relatively intact blanket bog, an adverse effect rated as of Significance in a Local context, the loss of bog will be off-set by the implementation of the Biodiversity Enhancement and Management Plan which will preserve and enhance an area of 3.9 ha of blanket bog for the lifetime of the Proposed Development.

With mitigation measures implemented in full to minimise disturbance to high bog adjoining the work area at the wind turbine AT13 location, the significance of a disturbance effect can be reduced from a Moderate effect of medium-term duration to a Slight effect of medium-term duration.

The effect of the permanent and temporary loss of hedgerows will be offset by the implementation of an extensive hedgerow and woodland planting scheme.

With mitigation measures as presented implemented in full, it is considered that the significance of the predicted effect on terrestrial mammal species and amphibian and reptile species as a result of the Proposed Development will be Not Significant.

Following extensive surveys within and surrounding the site for the Wind Farm, it is considered that the landscape in which the proposed Wind Farm is situated is of moderate risk for soprano pipistrelle, Leisler's bat and common pipistrelle. With the implementation of the mitigation outlined above the potential risk of fatality from collision and/or barotrauma events to foraging and/or commuting high risk species such as pipistrelle and Leisler's have been significantly reduced, and it is concluded that the Proposed Development will not have any long-term adverse effects on the local bat populations. Impacts on other bat species have also been assessed. While these species are not at high risk from collision they can be affected by loss of connectivity features and loss of roosting sites. However, the Proposed Development will include extensive hedgerow and woodland planting and these planted areas will be connected to existing habitats, which will be beneficial for local bat populations.

8 **ORNITHOLOGY**

Chapter 7: Ornithology of the EIAR evaluates the effects of the Proposed Development arising from the construction/decommissioning and operational phases on bird populations within and surrounding the Redline boundary. The assessment is based on desk studies and detailed Site surveys carried out between April 2021 and June 2023. The surveys comprised the following:

- Flight activity (Vantage Point) surveys
- Lackan Bay coastal survey
- Breeding & winter bird transect surveys
- Breeding merlin survey
- Breeding woodcock survey
- Breeding wader survey
- Winter hen harrier roost survey

While the site is in close proximity to the Killala Bay/Moy Estuary SPA, none of the Special Conservation Interests of the SPA utilise the area of the Wind Farm.

The species recorded of the highest conservation importance was hen harrier, which utilises the area for both foraging and roosting in winter (absent as a breeding species). The presence of merlin, albeit on a very local basis, is also of note. Both of these species are listed on Annex I of the Birds Directive.

Snipe, a Red-list species, breeds (3 recorded pairs) within the Wind Farm area and is also widespread in winter. Kestrel, also Red-listed, hunts within the Wind Farm Site area through the year and is likely to breed locally. Woodcock (Red-list) is a scarce winter visitor to the area. Two red-listed passerine species, meadow pipit (resident) and redwing (winter), are widespread throughout the study area.

A range of Amber-listed species breed within the Wind Farm Site, including skylark, swallow, willow warbler, starling, house sparrow and linnet.

The Green-listed sparrowhawk and buzzard are both widespread species within the study area.

For hen harrier (winter), kestrel (all year) and snipe (breeding), the study area is rated as of County Importance (following NRA 2009 Guidance). For all other species as described above, the study area is rated as of Local Importance (higher value).

Potential effects that could arise during the Construction, Operation and Decommissioning phases of the Proposed Development are assessed for designated sites and bird populations within the Site and surrounding areas. Where significant effects are identified, mitigation measures in accordance with best practice and guidance will be implemented to eliminate or reduce the effect.

With mitigation measures, including a Biodiversity Enhancement Management Plan (BEMP) and the hedge and woodland planting programme, implemented in full, it is considered that the significance of the predicted adverse effects on birds as a result of the Project will range from Imperceptible to, at most, Slight.

In particular, the localised loss of peatland habitat at AT13 location will be offset by the BEMP and over time the effect on birds will be reduced to a level of Slight Significance.

Similarly, the effect on birds by the loss of hedgerows and trees will be offset by a rigorous planting programme and over a medium-term period (up to 15 years) it is considered that the effect will be reduced to the level of Not Significant.

In the absence of mitigation, the construction phase of the Wind Farm may result in disturbance to breeding birds within a distance of up to 500 m of the work area – this is rated as an Adverse Significant Effect of Short-term duration for sparrowhawk, buzzard, kestrel and snipe. With mitigation in place, comprising the use of work restrictive zones around identified nests areas (as determined by survey at the time), the disturbance effect will be avoided completely or, at most, reduced to level of Not Significant.

All construction works associated with the Proposed Development have potential to result in direct effects on breeding birds. However, as surface clearance works will be carried out largely outside of the breeding season (in compliance with the Wildlife Acts), this impact will be avoided. Should removal of any vegetation be required during the breeding season, this would be subject to survey for presence of breeding birds by an experienced ornithologist and appropriate mitigation implemented to avoid or minimise adverse effects.

During the operational phase of the Proposed Development, predicted collision rates for target species have been shown to range from Not Significant (hen harrier, buzzard, sparrowhawk & peregrine) to a Slight Adverse Effect (kestrel, lesser black-backed gull). For kestrel (Red-listed) in particular, mitigation will be implemented to discourage birds from hunting close to turbines and the significance of the effect can be reduced.

During the operational phase of the Proposed Development, birds may show some avoidance of suitable habitat as a result of the presence of turbines. This is rated as a Slight Adverse effect for hen harrier and buzzard. However, with time and a degree of habituation, this effect is likely to be reduced.

The baseline surveys did not identify any regular migration routes or local movements of wetland bird species or birds of prey through the Wind Farm Site. The Proposed Development is not expected to have any residual effect on migrating species or local wetland bird populations.

With appropriate mitigation in place to prevent effects on the quality of habitats within the Killala Bay/Moy Estuary SPA, significant residual adverse effects on the Special Conservation Interests, as well as Wetlands, are not predicted (assessed in detail in the AA Screening Report and NIS).

The Proposed Development includes rigorous ornithological monitoring (in line with best practice guidance) at pre-construction, construction, and operational phases.

9 LAND, SOILS & GEOLOGY

Chapter 8: Soils & Geology, of the EIAR evaluates the effects of the Proposed Development arising from the construction/decommissioning and operational phases on the land, soils and geology within and surrounding the Redline Boundary. The assessment is based on desk studies and Site surveys.

The Proposed Development is situated within an area comprised of agricultural livestock grazing farmland, cutaway bog and conifer forestry plantation.

Subsoils underlying the Site are characterised generally as cutover peat. Peat depth across the Site is generally shallow to moderately deep with isolated pockets of deeper peat. The bedrock underlying the proposed wind farm includes sandstones, siltstones and shales of the Downpatrick Formation and the Mullaghmore Sandstone Formation, whilst limestone pertaining to the Ballina Limestone Formation underlies parts of the Grid Connection. There are no karst features located in the vicinity of any of the main structural elements of the Proposed Development.

Geological Survey of Ireland (GSI) online mapping records the Proposed Development to be located predominantly on lands of 'Low to Moderate' landslide susceptibility, with isolated

areas in the north mapped as having 'Moderately High' susceptibility. However, GSI mapping records no incidents of a peat landslide occurrence either within the Project or within the 2 km Study Area buffer. The closest recorded incident, in this respect occurred at Shanetra in 2000, approximately 8 km to the south west of the site. No indications of existing stability issues or historic mass movement were observed on the Site during site surveys.

Site specific detailed Peat Landslide Hazard Assessment has also been undertaken for the Proposed Development. This assessment has determined there to be either 'Low' or 'Negligible' hazard in relation to peat stability issues at the main infrastructure prior to application of mitigation. Proposed mitigation will result in an overall reduction to 'Negligible' hazard, in respect to Peat Landslide hazard.

The likely potential effects on land, soils and geology (*along with their pre-mitigation significance*) arising during the construction phase as a result of the Project have been identified as follows;

- Land take (temporary and permanent) **Not Significant** (Moderate)
- Compaction, erosion and degradation of soils. **Not Significant** (Moderate)
- Subsoil and bedrock removal **Not Significant** (Moderate)
- Stability issues (excavations, peat, spoil storage) **Significant** (Significant)
- Soil contamination **Significant** (Moderate)

No new significant effects are anticipated during the operational phase. These will be the same as for the construction phase, but of a reduced magnitude.

No new significant effects are anticipated during the decommissioning phase. These will be the same as for the construction phase, but of a reduced magnitude.

The potential effects in relation to land soils and geology are considered localised, direct effects. However, there is also the potential for soils and geology to intercept downstream receptors such as surface water and groundwater or ecology as indirect or secondary effects. Such indirect effects have also been considered during the assessment process.

The cumulative effects of the soils and geology of the Project consider the importance of soils and peatlands in particular, in terms of ecological value and carbon value. Aims and objectives for soil quality and soil health are outlined in the EU Soil Strategy (EC, 2021), which includes for protecting and reducing degradation of soils. The Project will have a

positive benefit in this respect, by limiting drainage of wetlands and organic soils as well as restoring managed and drained peatlands, reducing erosion and restoring degraded soils.

Mitigation measures presented and detailed in the Chapter address the likely effects identified and include key design and management principals in line with cited industry Best Practice and Guidance. Mitigation in summary includes:

- Mitigation by design, including mitigation by avoidance and reduction
 - Infrastructure designed to avoid potentially hazardous areas such as areas with deeper peat or shallow bedrock as far as possible and within the constraints of other environmental receptors.
 - Floating tracks where suitable and geotechnically feasible to reduce the excavation of peat.
 - Minimising the amount of soils and bedrock to be excavated / disturbed through design
- Mitigation by best practice
 - Minimising disturbance of soils by limiting vehicular movements and restricting spoil storage to within the footprint of the development.
 - Minimising the potential for stability issues by controlling vehicular movements and the careful siting of soil storage on suitable lands within the development.
 - Spoil Management: excavated material will be appropriately segregated for reinstatement and stored appropriately to reduce the potential of erosion and degradation of soils.
- Mitigation by reuse
 - Spoil Management: whenever possible, soil and rock will be reused immediately. Any surplus spoil will be appropriately stored in designated storage areas and retained on-site for the duration of the Project. This material will be reused during reinstatement and restoration works during the decommissioning phase.
 - Excavated bedrock will be reused for access tracks or hardstand fill material.

Mitigation measures outlined in **Chapter 8** are imbedded into the CEMP. This CEMP will be updated by the civil engineering contractor and agreed prior to any works commencing on Site.

The unavoidable residual effects on the soils and geology environment as a function of the Development is that there will be a change in ground conditions at the Site, during the

construction phase, with natural materials such as peat, subsoil and bedrock being replaced by concrete, subgrade and surfacing materials. The long-term or permanent residual effects on the geological receiving environment resulting from the construction phase of the Project is at most Moderate / **Not Significant** with respect to EIA.

The long-term residual effects associated with the operational phase will be Slight / **Not Significant** with respect to EIA, following the adoption of mitigation through good site practice in relation to vehicular movement controls, hydrocarbon and other pollution prevention controls, sustainable use of natural resources and protection measures for human health.

The main residual effects associated with decommissioning include waste generation, potential hydrocarbon spills and erosion of soil and rock. Following reinstatement works, it is expected that the Project will be returned as close to its present condition as possible. In particular, areas of peat and current drainage regimes will be reinstated and left to revegetate naturally with the passage of time and the Site will revert over time to a more natural drainage regime. It is expected that the long-term residual effects associated with the Project will therefore be Slight / **Not Significant** with respect to EIA..

10 **HYDROLOGY, HYDROGEOLOGY**

Chapter 9: Hydrology & Hydrogeology, of the EIAR assesses all elements of the Proposed Development and potential effects arising from the construction/ decommissioning and operational phases.

A comprehensive impact assessment of the proposed Tirawley Wind Farm development (i.e. the Proposed Development) on the hydrological and hydrogeological environment has been undertaken. The assessment is based on a desk study, walkover surveys, site investigations, baseline surface water quality and water flow monitoring. This chapter assesses the likely significant effects that the Proposed Development may have on the hydrological and hydrogeological environment and prescribes mitigation measures to avoid, reduce or offset any potential significant effects.

Regionally, the Wind Farm Site is located in the Blacksod-Broadhaven Bay surface water catchment and inside the Glencullin River sub-catchment. More locally, the majority of the Wind Farm Site is drained by the Cloonalaghan River which discharges into Lackan Bay. Some areas on the northeast of the Wind Farm Site are drained by small streams which flow directly into the sea.

Surface water drainage at the Wind Farm Site is currently enhanced by a network of manmade drains. The nature of these drains depends on the local land use. In agricultural areas, drainage is facilitated by manmade field drains that are typically routed along hedgerows and field boundaries and discharge locally to nearby streams. In the existing forestry plantations, a network of mound and ribbon drains run perpendicular to the local topographic contours and feed into interceptor drains downgradient of the forestry plantations. The forestry drainage system flows towards and discharges into natural streams located downgradient of the plantations.

In the vicinity of the Wind Farm Site, the Grid Connection is drained by the Cloonalaghan River. Further south, the Grid Connection is located in the Moy and Killala Bay surface water catchment and is drained by the Cloonaghmore River and its tributaries. Further east, in the vicinity of Killala Business Park the Grid Connection is drained by the Moyne Stream. There are a total of 10 no. watercourse crossings along the Grid Connection over natural watercourses. These are located at existing bridge and culvert locations.

A site-specific flood risk assessment was undertaken for the Proposed Development. The assessment concluded that the Proposed Development is not located in an area that is susceptible to flooding and is deemed to be suitable from a flood risk perspective. Drainage attenuation will be applied to ensure no impacts on downstream flooding will occur as a result of the Proposed Development.

In terms of the baseline hydrogeological environment, the Wind Farm Site is predominantly underlain by a Poor Aquifer associated with the Belmullet Groundwater Body. These rocks are devoid of intergranular permeability, groundwater flowpaths will be short (30-300 m) and will be concentrated in weathered zones. Some areas in the northeast and south of the Wind Farm Site are underlain by a Locally Important Aquifer and the Killala North Groundwater Body which is characterised by productive fissured bedrock.

Due to the nature of wind farm developments, being near surface construction activities, effects on groundwater are generally negligible and surface water is generally the main sensitive receptor assessed during impact assessments. The primary risk to groundwater would be from oil spillage and leakages at turbine foundations or during construction plant refuelling. These are common potential impacts to all construction sites (such as road works and industrial sites). These potential contamination sources are to be carefully managed at the during the construction and operational phases of the Proposed Development and measures are prescribed within the EIAR to deal with these potential minor local impacts.

During each phase of the Proposed Development (construction, operation, and decommissioning) a number of activities will take place at the Proposed Development site, some of which will have the potential to significantly affect the local and downstream hydrological regime and water quality. These significant potential effects generally arise from sediment input from runoff and other pollutants such as hydrocarbons and cement-based compounds.

Surface water drainage measures, pollution control and other preventative measures have been incorporated into the project design to minimise significant impacts on water quality and downstream designated sites. A self-imposed 50 m buffer from natural watercourses was used during the design of the Proposed Development, thereby avoiding sensitive hydrological features. The surface water drainage plan will be the principal means of significantly reducing sediment runoff arising from construction activities and to control runoff rates. The key surface water control measure is that there will be no direct discharge of wind farm runoff into local watercourses or into the existing site drainage network. This will be achieved by avoidance methods (i.e. stream buffers) and design methods (i.e. surface water drainage plan). Preventative measures also include fuel and concrete management and a waste management plan which will be incorporated into the Construction and Environmental Management Plan.

Detailed mitigation measures have also been prescribed where works in the Wind Farm Site and along the Grid Connection are proposed in close proximity to existing watercourses at existing and proposed watercourse crossings. These mitigation measures will ensure that there is no significant effect on downstream surface water quality and/or quantity.

No significant impacts to surface water (quality and flows) and groundwater (quality and quantity, and any local groundwater wells) will occur as a result of the Proposed Development provided the proposed mitigation measures are implemented. This EIAR presents proven and effective mitigation measures to mitigate the release of sediment which will reduce the concentration of suspended solids to acceptable levels. The storage and handling of hydrocarbons/chemicals will be carried out using best practice methods which will ensure the protection of surface and groundwater quality. The Proposed Development drainage system will be designed to slow surface water runoff from the Proposed Development Site by providing greater attenuation. This will ensure that the Proposed Development does not alter downstream surface water flows and will not contribute to downstream flooding.

An assessment of local water resources was completed as part of the impact assessment. There are no downstream surface water abstractions with the potential to be impacted by the Proposed Development. Similarly, there are no downgradient public or group scheme groundwater supplies that can be impacted by the Proposed Development. An assessment of the potential effects on local well supplies concluded that due to separation distances and the prevailing hydrogeological regime, no effects on local groundwater supplies will occur. Furthermore, the implementation of the prescribed mitigation measures will ensure that there is no deterioration in local groundwater quality.

A hydrological assessment of potential impacts on local designated sites was undertaken. The Lackan Saltmarsh and Kilcummin Head SAC/pNHA and the Killala Bay / Moy Estuary SAC, SPA and pNHA are considered to be hydrologically connected to the Proposed Development via the Cloonalaghan and Cloonaghmore River respectively. Furthermore, Killala Esker pNHA is located in close proximity to the Grid Connection and has been included in the impact assessment. With the implementation of the prescribed mitigation measures no significant impacts on these designated sites will occur as a result of the Proposed Development.

A Water Framework Directive (WFD) Compliance Assessment has been completed for all waterbodies (surface water and groundwater bodies) with the potential to be impacted by the Proposed Development. With the implementation of the mitigation measures detailed in this EIAR there will be no change in the WFD status of the underlying groundwater bodies or downstream surface waterbodies as a result of the Proposed Development. The Proposed Development has been found to be fully compliant with the WFD and will not prevent any waterbody from achieving its WFD objectives.

An assessment of potential cumulative effects associated with the Proposed Development and other developments on the hydrological and hydrogeological environment has been completed. With the implementation of the mitigation measures detailed in this EIAR, the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments.

11 AIR AND CLIMATE

This section assessed the effect of the Proposed Development on air quality, given the potential for dust emissions, and the likely carbon dioxide reduction effects of the Proposed Development in operation. Mitigation measures for the reduction of dust are outlined in the **EIAR Chapter 10: Air and Climate**.

For nuisance dust (larger dust particles) receptors situated within 250 m the Wind Farm Site infrastructure are defined as sensitive receptors based on IAQM 2024. Mitigation measures for the reduction of dust are outlined in the **EIAR Chapter 10: Air and Climate, Section 10.2.5**. The Proposed Development has been assessed as having no significant direct or indirect effects on air quality during the construction, operation or decommissioning phases of the Proposed Development.

Potential cumulative effects were assessed as having a cumulative long-term, significant, positive effect on air quality.

The layout of the Development has been designed to minimise the potential environmental effects of the wind farm while utilising the maximum energy yield from the site's wind resource. The selection of breaking new ground and impacting on natural habitat has been kept to a minimum.

The Proposed Development does not contain any element, which will produce Green House Gas (GHG) emissions or odorous emissions in operation. Indeed, the Proposed Development will contribute to a net national reduction in the emissions of greenhouse and other gases resulting from the combustion of fossil fuels.

Savings of carbon dioxide arise principally from the generation of electricity from the Proposed Development, such that generation from other sources (which emit carbon dioxide) are offset. The estimated savings depend on the assumption of which source of electricity is displaced and the savings of approximately 49,719 tonnes of CO₂ will be displaced per annum. In total, it is estimated that 1,740,156 tonnes of CO₂ will be displaced over the proposed 35-year lifetime of the Proposed Development.

Ireland has set a target to achieve a 75% reduction in overall greenhouse gas emissions by 2030, setting a path to reach net-zero emissions by no later than 2050. The target for 2030 is to generate 80% of the country's electricity from renewable sources. The Proposed Development will contribute 68.8 MW of installed capacity. The cumulative effect with other Irish renewable generation is considered to be a fundamental change in the climate effects of Ireland's energy supply, which is a major, positive effect, that is significant under the EIA Regulations and will contribute to Ireland's binding emission reduction targets.

In isolation, the Proposed Development will have a significant positive effect on carbon savings and cumulatively, a significant positive effect when considered with Ireland's renewable energy deployment.

12 **NOISE**

This chapter of the EIAR assesses the effects of the Proposed Development from noise impacts. This Section has assessed the significance of the potential effects of the Proposed Development during operation, construction and decommissioning.

The effects of noise from the operation of the Proposed Development has been assessed using 2006 Guidelines with the methodology described in ETSU-R-97, the IOA Good Practice Guide and the NG4 Guidance document. Noise levels during operation of the Proposed Development have been predicted using the best practice of calculation technique. They have been compared with the noise limits in the 2006 Guidelines, recent 2021 An Bord Pleanála limits and the NG4 Guidance document and found to be compliant. Baseline noise monitoring was undertaken during two measurement periods, firstly between 20th April and 16th May 2023 and secondly between 22nd September 2023 and 12th October 2023 at the locations shown in **EIAR Appendix 11.1**. Two continuous measurement periods were undertaken in order to gather sufficient wind speed monitoring data, which was completed over the same period at the same 10-minute intervals using a Lidar located on Site. Noise data was recorded for a representative range of wind speeds during the monitoring period.

The eight noise monitoring locations are considered representative of the local noise environment. The propagation model calculates the predicted sound pressure levels by taking the source sound power level for each turbine in their respective octave bands and subtracting a number of attenuation factors. The standardised 10 m wind speed was plotted against the time synchronised background noise levels using a best-fit polynomial line.

The predicted noise levels have been compared with the appropriate noise limits based on the 2006 Guidelines and taking into consideration the recent 2022 An Bord Pleanála decisions. The predicted noise levels are higher than the night-time noise limit of 43 dB at six receptors, at various wind speeds – H3, H4, H6, H10, H11 and H13. It has been confirmed by the applicant that one of these receptors is financially involved with the Proposed Development, H8, to which a 45 dB limit may be applied; therefore, there are no exceedances at these receptors.

When directivity is considered, there are no exceedances of the 45 dB daytime limit. However, there are exceedances of the night-time limit of 43 dB at three receptors after considering directivity: H3, H4, and H11. A curtailment strategy shall ensure compliance with the 43 dB night-time limit and shall be implemented during the following condition:

- **Turbines AT08, AT09 and AT10** shall be operated in Sound Optimized Mode SO2 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the East.
- **Turbines AT08 and AT09** shall be operated in Sound Optimized Mode SO2 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the North-East and South-East.
- **Turbine AT06** shall be operated in Sound Optimized Mode SO1 during night-time period, from wind speeds of 7-12 m/s and for wind blowing towards the South-West

There has been a consultation process in relation to the revision of the 2019 Wind Energy Development Guidelines. This document provided the basis for a discussion on amendments of the noise limits applicable to wind turbine developments. It is understood that there will be revisions to the draft consultation documents, however a mitigation strategy to incorporate a reduction in sound power level outputs with respect to directionality can be put in place to comply with any specific variation in noise limit levels if new more restrictive guidelines are adopted. All turbines have software incorporated so that the sound power levels can be reduced by direction and energy output.

The noise levels predicted at the nearest receptors are orders of magnitude below the level at which risk of hearing damage, or indeed negative health effects are possible. Noise during construction of the Proposed Development and decommissioning will be managed to comply with best practice, legislation and guidelines current at that time so that effects are not significant.

13 **LANDSCAPE AND VISUAL**

Chapter 12 of the EIAR describes the landscape context of the proposed Tirawley Wind Farm and assesses the likely landscape and visual impacts of the scheme on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

Landscape Impact Assessment (LIA): Relates to changes in the physical landscape brought about by the Proposed Development, which may alter its character and how it is experienced. This requires a detailed analysis of individual elements and characteristics

that make up the overall landscape character of an area. It provides a measure of the landscape's ability to accommodate change without causing unacceptable adverse changes to its character.

Visual Impact Assessment (VIA): Relates to assessing effects on specific views and on the general visual amenity experienced by people. It deals with how surroundings are affected by changes in the content and character of views due to the loss of existing elements or the introduction of new ones. Visual impacts may occur from Visual Obstruction (blocking a view) or Visual Intrusion (interruption of a view without blocking).

In accordance with relevant guidelines, the study area used for the LVIA is 20 km. Production of the LVIA involved desktop studies and fieldwork followed by professional evaluation by qualified Landscape Architects. The landscape assessment considers potential effects with reference to landscape character areas and criteria. The visual assessment considers effects upon visual receptors including scenic amenity designations, centres of population, transport routes, and local community views using 36 viewpoints (VPs) from representative and sensitive locations. Photomontages have been prepared for these viewpoints, including existing views, wireframe views, and proposed views.

The Proposed Development is located across a plateau of low rolling hills that rise towards Knockboha Summit (186 m AOD), located immediately north of the Wind Farm Site. While lower rolling hills and ridges extend to the south, the terrain descends towards the coastline to the north, east, and west of Knockboha Summit. Knockaghaleague Hill is another prominent elevated hilltop within the southwest periphery. Notable watercourses include the Heathfield River, which intersects a section of the Wind Farm Site adjacent to the R314. The principal land use within the central and wider study area is agricultural farmland bound by mixed hedgerow vegetation, though extensive areas of bogland and large commercial conifer forest plantations also occupy large tracts. Elevated lands of the Wind Farm Site principally comprise boglands and commercial conifer forestry. The wider study area encompasses notable wind farm developments, with the largest agglomeration in the southwest quadrant. Linear land uses include the N26 national primary route and N59 national secondary route in the southern periphery, along with a network of regional roads.

Visual Baseline and Receptors

- **Centres of Population:** The principal settlement is Ballycastle, situated approximately 4 km west of the turbine array. The village of Kincon is located approximately 3 km south

of the Wind Farm Site. The settlement of Killala is situated approximately 5.5 km southwest along Killala Bay.

- **Transport Routes:** The N59 is located approximately 12.9 km south of the turbine array at its nearest point. The N26 is located approximately 16.5 km southeast of the Wind Farm Site. The nearest major route is the R314 regional road, situated less than 200 m from the nearest proposed turbine.

Under the Mayo County Development Plan (CDP) 2022-2028, the Wind Farm Site is located across two landscape character units: Area D: North Coast Plateaux (northern extent) and Area G: North Mayo Drumlins (southern extent). Character units in the wider area include Area E (North Mayo Mountain Moorland), Area F (North Mayo Inland Bog Basin), and Area C (North West Coastal Bog). The proposed wind farm is situated across Policy Area 1 (Mountain Coastal Zone), which has "High" sensitivity to wind farm development, and Policy Area 4 (Drumlins and Inland Lowland), which has "High/Medium" sensitivity.

For most commercial wind energy developments, the greatest potential for landscape impacts is the change in character due to the introduction of tall structures with moving components. In this instance, wind energy development is already an existing feature c. 5.5 km southeast (Killala) and in the wider southwest quadrant (Bellacorrick basin). The effect is therefore an intensification of an established land use rather than the introduction of a new, unfamiliar feature.

The proposed wind farm is well assimilated within the Central Study Area due to the broad scale of landform and land use patterns. The turbines are well offset from some of the most sensitive coastal landscape features. Ancillary features including an Onsite GIS Substation (approximately 15 m high), a BESS compound (approximately 6,360 m²) and a Met Mast (80 m high) will result in a localized increase in built development.

Summary of Visual Impacts

Up to 26 viewpoints were selected to represent local community receptors within the study area.

- **Significance Range:** Visual effects for local community views ranged from "Substantial-moderate" to "Slight-imperceptible".
- **Substantial-moderate Impacts:** Five viewpoints were classified as having a "Substantial-moderate" significance of effect: VP8, VP11, VP16, VP21, and VP36 (The Gazebo at Lacken).

- Moderate Impacts: Eight viewpoints representing the local community were classified with a "Moderate" residual significance of effect: VP9, VP14, VP15, VP19, VP22, VP24, VP26, and VP27.

While turbines will present at a considerable scale at some near receptors, they do not generate a notable sense of overbearing nor appear out of place in this robust setting. From susceptible coastal locations, turbines are typically viewed in the opposite direction to the main aspect of visual amenity (the sea). The irregular spacing and dispersed layout allow for visual permeability and prevent a sense of being contained within the wind farm. Overall, residual visual effects are assessed as Not Significant.

Cumulative Impacts

- Current Cumulative Scenario: Assesses the Proposed Development in respect of existing and consented developments. These are well offset from each other and viewed as separate developments. The magnitude of cumulative effect is deemed Low, as no other existing or consented developments are located within the central study area.
- Potential Future Cumulative Scenario: Includes proposed (in-planning) and pre-planning developments like Glenora and Keerglen. While this scenario would see a more prevalent presence of wind energy, the Proposed Development is contextually separated from these proposed farms by at least 7.6 km. The magnitude of cumulative effect for the future scenario is deemed High-medium.

14 SHADOW FLICKER & EMI

Chapter 15 of the EIAR contains a shadow flicker analysis. Shadow flicker is the effect of light levels in a sunlit room noticeably varying as a result of the shadow of a turbine blade passing a window, causing a nuisance. Industry standard software was used to model the potential for shadow flicker to occur, based on the proposed turbine locations and dimensions and the locations of residential properties.

The Study Area is defined as 10 times the maximum potential rotor diameter (10 x 117 m = 1,170 m). It is common practice to use a distance of ten rotor diameters as a maximum limit within which significant shadow flicker effects can occur, this is based on WEDGs 2006 which state: 'At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low'.

Cumulative shadow flicker effects could arise if dwellings are at risk from potential shadow flicker effects as a result of more than one wind farm. While separate wind farms are not likely to cause effects simultaneously, they could increase the cumulative total hours where a receptor is affected. In this instance, there are no proposed or operational wind farms within a 2 km range of the Wind Turbines that may cause cumulative effects.

The assessment has identified the potential for shadow flicker to affect 108 no. out of 119 no. receptors within the shadow flicker Study Area. It is proposed that a shadow control system be installed to eliminate the potential for shadow flicker from the Proposed Development above the recommendations of the 2006 Guidelines. This assessment has identified that by installing a blade shadow control system on the proposed turbines, there will be no significant direct or indirect effects. Given that only effects of significant effect or greater are considered "significant" in terms of the EIA Directive the potential effects of the Proposed Development as a result of shadow flicker, when mitigated, are considered to be not significant. The Proposed Development has been assessed as having the potential to result in neutral, imperceptible, long-term effects overall with regards to shadow flicker. There are no predicted cumulative effects.

15 CULTURAL HERITAGE

Chapter 14 of the EIAR presents a baseline study of and impact assessment on, the cultural heritage of the Proposed Development and an associated defined Study Area. The assessment was based on a series of site inspections and a programme of desktop research which were carried out to identify and record any archaeological, architectural and cultural heritage receptors that may be affected by the Proposed Development. The significance of effect on a receptor is considered by establishing its value/sensitivity, and how (and to what extent) it may be impacted based on the proposed design of the Proposed Development.

There are no designated cultural heritage receptors located within the footprint of the Proposed Development. There is one undesignated cultural heritage receptor located within the footprint of the Proposed Development that is likely to be directly impacted during the construction stage. This comprises the derelict remains of a nineteenth century vernacular structure in Leacarrowntemple townland which is within the route of a Site Access Track to AT16. The direct construction phase effect on this undesignated structure is considered to be of Moderate significance. A written, drawn and built heritage survey of this structure will be carried out prior to removal (preservation by record) which will result in a residual Slight significance of effect.

There are a number of designated cultural heritage receptors located within the 100m corridor centred on the GCR which extends along areas previously disturbed by the construction of existing roads. One of these, Palmerstown Bridge (RPS ref. 017), is located within the route corridor while the other examples are located within private properties located adjacent to the route (four ringforts, a holy well and five architectural heritage structures). Palmerstown Bridge and its associated watercourse will not require any interventions as part of the Proposed Development with the GCR construction involving directional hydrologic drilling underneath the riverbed and entering/existing beyond the riverbank on both sides. The construction of the GCR will result in no direct effects on known cultural heritage receptors and indirect setting effects on receptors within its environs will be Not Significant in significance.

The TDR will require improvements and temporary accommodation requirements along existing local road networks. There are no recorded cultural heritage constraints at any of the locations of these works. A megalithic structure (MA014-050----) is located within a greenfield area 70 m to the northwest of a road widening area in Annagh Beg townland and a Neutral effect on this archaeological site is predicted. The construction the TDR will not result in any direct or indirect effects on known cultural heritage receptors.

There are a number of archaeological monuments and designated architectural structures located in lands surrounding the Wind Farm Site which retain sensitive landscape setting characteristics. These include Carn House (RPS 187), Carn archaeological complex (MA014-061001- to MA014-061005-), Castlelackan folly (Lackan Gazebo) (RPS 016), cairn sites MA014-002005- and MA014-002006-, Rathlackan archaeological complex and amenity area including court tomb MA007-016006-, wedge tomb at Rathfrankpark (National Monument 633), stone circle at Rathfrank (National Monument 389) and Rathfrank Abbey (National Monument 269). Overall, these are considered high value receptors that are likely to have predicted negative long-term (reversible) indirect effect of medium-high magnitude on setting, and this will result in a range of Moderate-Significant indirect significance of effects during the operational phase. Given the nature of the Turbine structures, there are no mitigation measures that can address these indirect effects on heritage landscape setting, but it is noted that these effects will be reversible at the decommissioning phase.

In advance of the main construction stage, a programme of licenced archaeological testing shall be carried out at certain locations within the design footprint, in agreement with the National Monuments Service. Ground works during the construction phase will also be subject to archaeological monitoring by a suitably qualified archaeologist under licence by

the National Monuments Service. This will also include systematic advance programme of archaeological field-walking surveys within Proposed Development areas in forestry plantations following tree felling.

In the event that any sub-surface archaeological features are identified during archaeological monitoring they will be securely cordoned off, cleaned and recorded in situ. The National Monuments Service will then be notified and consulted to determine further appropriate mitigation measures, which may include preservation in situ (by avoidance) or preservation by record (archaeological excavation).

16 MATERIAL ASSETS AND OTHER ISSUES

Chapter 13 of the EIAR considers a number of other issues associated with the Proposed Development, including potential effects on Land Use – Agriculture and Forestry, Telecommunications, Electricity Networks, Air Navigation, Quarries and Utilities (gas, water, wastes).

16.1 Land Use - Agriculture

The Wind Farm Site is comprised of blanket bog, coniferous forestry, transitional woodland scrub and agricultural pastures. Land cover at the Wind Farm Site is mapped by Corine (2018) as inland wetland peat bogs, with some smaller areas of coniferous forestry, semi natural areas and agricultural pastures (www.epa.ie).

The total permeant land take of the Wind Farm Site, including the Site Access Tracks, Turbine Hardstands, Turbine Foundations, Permanent Operations Compound, Met Mast Hardstands, sub-station, BESS and public roads within the Wind Farm Site is approximately 9.21 ha. The Wind Farm Site has an area of 108.06 ha therefore the total land take is 8.52% of the Wind Farm Site. The immediate surrounding agricultural grasslands will remain in agricultural use.

The construction, operational and decommissioning phase of the Proposed Development will result in a change of approximately 15.68 hectares of agricultural land use in area, to facilitate new Site Access Tracks, Onsite Substation, BESS, civil works and Turbine Hardstands.

There will be 7 no. turbines located on or partly on agricultural lands. This will result in the change of use from agricultural use to windfarm use. This will have a long-term, slight, negative effect on agricultural land use due to the removal of grazing lands for the duration of the Proposed Development during construction and operation phases.

16.2 Land Use - Forestry

The proposed site area contains approximately 172 hectares of forestry, all of which is under private ownership and is being managed on a commercial basis. The proposed windfarm infrastructure layout affects forestry at 9 of the 16 planned turbine locations. Additionally, the Met Mast location and parts of the proposed Site Access Tracks overlap with forested areas. To facilitate the construction of the proposed wind farm at Tirawley, approximately 31.86 ha of existing forestry is due for infrastructure felling. A summary of the forestry affected is provided in **Table 16.1**

Table 16.1: Summary of Removal of Forestry to facilitate the Proposed Development

Infrastructure	Area of forestry lost (ha)	Species present
AT01	-	-
AT02 (incl. Site Access Tracks)	2.91	SS, JL, BI
AT03 (incl. Site Access Tracks)	5.15	SS, JL
AT04 (incl. Site Access Tracks)	4.21	SS, JL
AT05	-	-
AT06	1.58	SS, JL
AT07	-	-
AT08 (Site Access Tracks only)	0.28	SS, JL
AT09 (incl. Site Access Tracks)	3.44	SS, JL
AT10 (incl. Site Access Tracks)	2.93	SS, JL
AT11	1.79	SS, JL
AT12 (incl. Site Access Tracks)	3.08	SS, JL
AT13	-	-
AT14	-	-
AT15 (incl. Site Access Tracks)	3.46	SS, LP
AT16	-	-
Met Mast (incl. Site Access Tracks)	2.78	SS, JL, BI
Public road widening	0.25	Ash, ALD, SS, JL
Total	31.86	

The associated afforestation of alternative lands equivalent in area to those lands being permanently clear-felled is also subject to licensing ('afforestation licensing'). The Forest Service of the Department of Agriculture, Food & the Marine is Ireland's national forest authority and is responsible for all forest licensing. In light of the foregoing and for the purposes of this Proposed Development, the Developer has committed that the location of any replanting (alternative afforestation) associated with the Proposed Development will be greater than 10 km from the wind farm site and also outside any potential hydrological pathways of connectivity i.e., outside the catchment within which the Proposed Development is located. On this basis, it is reasonable to conclude that there will be no more than imperceptible, indirect, or in-combination effects associated with the replanting.

On this basis, it is reasonable to conclude that there will be no more than imperceptible, indirect or in-combination effects associated with the replanting.

16.3 Telecommunications

Operators of microwave communication links were contacted during the EIA process. Mitigation measures were adopted during the layout design to avoid impacting communication links. Disruption to television reception is considered unlikely following the switchover to digital broadcasting, as the signals are less susceptible to interference from turbines.

During the consultation with telecommunications operators was initiated during the scoping phase of this EIA to identify any potential microwave or telecommunication links that could be affected by the Proposed Development. Details of the Proposed Development were shared with link operators. Telecommunications operator 'Three' responded with concerns over wind turbine AT13 of the Proposed Development being located directly in the path of 1 of their existing transmission links.

Telecommunications operator 'ENET' responded with concerns over distances between the Proposed Development and their existing transmission links. Following mapping, concerns between the existing ENET transmission link and wind turbine AT04 were raised.

Other potential effects during the construction phase are likely to be as a result of tall cranes used for constructing the turbines. These cranes will be located close to the proposed turbine. There is potential for cranes at AT13 and AT14 to interfere with 1 link which passes through the area. There is a potential for cranes at AT04 to interfere with 1 link which passes through the area. However, any effect will be temporary in nature as it will only last when the mentioned turbines (AT04, AT13 & AT14) are being erected (approximately 2-3 days). The effect can be classed as moderate negative, but short-term in nature.

Following the feedback from the Three link operator, rerouting of the Three link from Knockboha to Ballina to Knockboha to Tawnaghmore was undertaken by Three. The rerouting allowed the link to pass at an acceptable setback distance from AT13. No effects are predicted on the Three link.

Following further investigation from the ENET operator the link from Shanettra to Beannchair was determined to be situated at a sufficient distance back from turbine AT04.

Therefore, no effects are predicted on the ENET link. Compliance with the EMC Directive 2014/30/EU will mean that the electromagnetic emissions from devices used will not cause interference to other equipment.

The effect on telecommunications during construction/decommissioning is likely to have a temporary slight negative effect.

The proposed turbines will have a long-term moderate negative effect on telecommunications during the operational phase. Implementation of the measures, will ensure that any residual effects will be not-significant negative and long-term in duration.

The effect on telecommunications during the construction and decommissioning phase of the Proposed Development due to electromagnetic emissions from the Proposed Development is likely to have an imperceptible effect.

There are 14 no. proposed, permitted or operational wind farms within 20 km of the Proposed Development (**EIAR Appendix 1.2**). In line with the Draft Wind Energy Guidelines 2019, each Developer is responsible for engaging with all relevant telecommunications operators to ensure their proposals will not interfere with television or radio signals by acting as a physical barrier. As such, the cumulative effect on telecommunications during the operational phase will remain not-significant, negative and long-term in duration.

The implementation of mitigation measures will ensure no interference with communication links. Therefore, no significant effects are predicted on telecommunications or radio reception as a result of the Proposed Development.

16.4 Electricity Networks

The preferred GCR will be an UGC from the Onsite Substation to the Tawnaghmore 110 kV Substation. Refer to **Figure NTS-7** for the proposed GCR. The overall length of this connection is 13.55 km. Of this, 12.43 km is located along the public road corridor, and 1.12 km is within the Killala Business Park grounds.

Connection will be sought from the grid system operator by application to EirGrid. The Onsite Substation will connect via 110 kV UGC to the Tawnaghmore 110 kV substation. At the existing Tawnaghmore 110 kV substation, the cable will connect into existing infrastructure within the confines of the substation and its compound. EirGrid is currently upgrading the 110 kV overhead lines leaving the Tawnaghmore 110 kV substation to increase

network capacity and support renewable energy integration in North Connacht. An upgrade of the existing transformer of the Tawnaghmore substation is likely to be required. Such upgrades will have a slight, positive short-term effect in terms of upgrading of critical infrastructure.

No significant negative effects on the electricity networks are anticipated. There will be a long-term slight positive residual effect on transmission infrastructure in the area (due to the installation of new infrastructure). There is no effect on the distribution network, as it is not proposed to utilise any elements of the distribution network. In addition, the energy produced will be from carbon neutral technology which will offset carbon from fuel energy production locally which will be a slight positive local effect.

16.5 Air Navigation

Operating wind farms have the potential to cause a variety of effects on aviation. Rotating wind turbine blades may impact on radar operations, although it is not likely at Tirawley. The physical height of turbines can cause obstruction to aviation and the overall performance of communications, navigation and surveillance equipment. All structures over 150 m in height are required to have lighting to warn aviation traffic.

The distance of the Proposed Development from all aircraft facilities in Ireland was undertaken. Crossmolina Airstrip is located c. 11.69 km south-west of the Wind Farm Site. Ballina Airfield is located c. 18.5 km to the south-east of the Wind Farm Site. Sligo Airport is located c. 43.2 km to the east of the Wind Farm Site. The closest international commercial airport is Ireland West Knock Airport is located c. 47.3 km to the south-east of the Wind Farm Site. The Wind Farm Site is outside of all “no-go” areas.

No significant effects are predicted in terms of air navigation. In adherence to IAA Safety Regulations and International Civil Aviation Organisation, ICAO Annex 15, aeronautical obstacle warning light schemes will be installed as requested by IAA. Co-ordinates of ground and tip height elevations at each wind turbine location as constructed will be provided to the IAA. IAA will be notified of the provision of the intention to commence crane operations within a minimum of 30 days prior to erection.

The potential effects of the Proposed Development on air navigation are considered not significant.

16.6 Utilities (gas, water, waste)

Gas

There are no gas mains located within the Proposed Development Redline. There is therefore no potential for effect. Gas Networks Ireland website Dial Before you Dig¹ was consulted, which indicated that there are no existing gas services along the GCR

There will no effect on the gas network pipelines during the construction phase, no effect during the operational phase and no effect during the decommissioning phase.

Water

In relation to water services within the Proposed Developments Redline, it has been assumed that there is the potential to encounter local water services within the Proposed Development.

The following water service features were identified along the GCR:

- Air control valves
- Fitting
- Hydrant
- Mains Line
- Network Meter
- System Valve

Potential effects arising from the Proposed Development relating to existing water services have been assessed and are detailed in **Chapter 9: Hydrology and Hydrogeology** and referred to in **Chapter 5: Population and Human Health** with accompanying mitigation measures.

Waste

It is likely that waste will be generated onsite during the construction and decommissioning phases of the Proposed Development. All rubbish and waste/excess materials will be removed from Site to an appropriate licenced facility from where it will be reused/recycled, where possible, or disposed of accordingly.

A desk study of available information from the EPA did not identify any waste facilities, illegal waste activities, chemical monitoring points or industrial EPA licensed facilities within

¹ <https://www.gasnetworks.ie/home/safety/dial-before-you-dig/dbyd/>

a 2 km radius of the Site. The nearest waste facility to the Proposed Development is a site at the Rathroeen Civic Amenity Site (W0067-02).

Mitigation measures will be implemented during each phase of the Proposed Development. Therefore, the residual effects of waste produced as a result of the construction, operational and decommissioning phases of the Development are considered to be not significant.

16.7 **Quarries**

Crushed stone required for construction of the Site Access Tracks, Turbine Hardstand, Turbine Foundation upfill, Onsite Substation, BESS compound, TDR works and Grid Connection works will be imported as outlined in **Chapter 17: Traffic and Transport**. The stone, estimated to be a volume of 35,592 m³ will come from a licenced quarry in the locality such as:

- Killala Rock Quarry, Killala
- Mullafarry Quarry, Killala
- Lacken Stone, Rathlacken
- Barrets Quarry, Banger Erris
- Molloy Concrete Limited, Ballina
- Harrington Concrete & Quarries, Turlough, Co. Mayo

No significant negative effects on local quarries are anticipated. There will be a slight, permanent, negative residual effect on natural resources in the area from the construction phase. There will be no effect during either the operational or decommissioning phases

This impact effect is considered to be imperceptible in the long-term

17 **ACCESS, TRAFFIC AND TRANSPORT**

Chapter 17 Traffic and Transport of the EIAR assesses the potential effects of traffic associated with the Proposed Development on the public road network and sensitive receptors. The assessment describes the existing public road and junction network, identifies the potential for significant effects in isolation and in combination with other developments, and outlines mitigation measures to avoid or reduce potential effects.

Assessment Scope

The assessment considers traffic generated during the following phases:

- Construction of the Proposed Development.
- Construction of the proposed Grid Connection.

- Transportation of turbine components along the Turbine Delivery Route (TDR).
- Enabling works at junctions and pinch points to facilitate the delivery of abnormal loads.
- Operation and maintenance of the Proposed Development during its 35-year life.
- Decommissioning of the Proposed Development.

Methodology and Documentation

Access to the Wind Farm Site will be provided via a total of 14 entrances, consisting of 5 new and 9 existing locations. These entrances are located off local public roads that branch off the R314. A detailed description of these entrances is provided in **EIAR Table 17.12**.

Turbine components will be shipped to Killybegs Harbour, Galway Port, or Foynes Port and transported via abnormal load vehicles. A Swept Path Analysis was undertaken for the Vestas V117 turbine, which features a blade length of 57.2 m, to identify required road alterations at 19 "pinch point" locations.

Predicted Traffic Volumes and Significance

The total number of HGV loads for the 21-month construction period is estimated at 11,022. This includes:

- 3,153 loads for Access Track work and Turbine Hardstands.
- 4,957 loads associated with civil and electrical works (BESS, Substation).
- 2,622 loads associated with Grid Connection works.
- 290 abnormal loads for turbine components.

Summary of Effects

- Construction Phase: Assessed as having a negative, low, direct, short-term, high probability effect. With mitigation, residual effects are assessed as low, negative, and short-term.
- Operational Phase: Traffic effects are considered imperceptible, involving approximately 1–2 maintenance visits per week.
- Decommissioning Phase: Effects are considered slight, negative, direct, and short-term.
- Cumulative Effects: Assessed as slight to moderate, negative, and short-term with a low probability of occurrence.

18 INTERACTIONS OF THE FOREGOING

Any potential impact on one element of the environment as a result of the Proposed Development may also impact on another. **Chapter 18** of the EIAR provides a summary of

the interactions and interrelationships between environmental aspects of the Proposed Development. This includes significant effects from each EIA chapter and also summarises the mitigation measures proposed to reduce either the likelihood or magnitude of these effects to an acceptable level.


Table 18.1 below outlines the different environmental aspects which have potential to interact because of the Proposed Development. Interactions have been clearly identified in the early stages of the Proposed Development and where the potential exists for interaction between environmental impacts, the EIA specialists have taken the interactions into account when making their assessment. Potential interactions (both positive and negative) have been considered for the construction, operational and decommissioning phases of each of the different environmental aspects of the Proposed Development.

All environmental factors are interrelated to some extent. Having studied the interaction of potential impacts during the construction, operational and decommissioning phases of the Proposed Development, it has been determined that no amplification effect is anticipated. The Proposed Development will have some positive impacts on an international, national, regional and local level. It is important to note that the landscape and visual impacts are almost entirely reversible upon decommissioning of the Development.

Table 18.1: Summary matrix of Interactions of Negative Impacts during Construction and Operational Phases (Source: Adapted from EIAR Guidelines, 2022)²

	Population & Human Health		Biodiversity		Soils & Geology		Hydrology and Hydrogeology		Noise		Landscape & Visual		Material Assets		Cultural Heritage		Traffic & Transportation		Air and Climate		
	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	Const & Decom	Oper	
Population & Human Health																					
Biodiversity																					
Soils & Geology																					
Hydrology and Hydrogeology																					
Noise																					
Landscape & Visual																					
Material Assets																					
Archaeology and Cultural Heritage																					
Traffic & Transportation																					
Air and Climate																					

Note: Const & Decom = Construction & Initial Decommissioning phase; Oper = Operational phase

 Interaction or inter-relationship  No interaction or inter-relationship

² Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available online at: <https://www.epa.ie/publications/monitoring--assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment.php> [Accessed on 28/04/26]