An Bord Pleanála

Inspector's Report

ABP-318704-23

Development	10-year development of nine wind turbines and associated infrastructure.
Location	Borrisbeg and adjacent townlands, near Templemore Town, County Tipperary.
Planning Authority	Tipperary County Council.
Applicant(s)	Buirios Limited.
Type of Application	Strategic Infrastructure, Section 37E.
Submissions	Tipperary County Council, Offaly County Council, Kilkenny County Council, Laois County Council, Department of Housing, Local Government and Heritage, Transport Infrastructure Ireland.
Public Submissions	Joan Delaney, John Delaney, Martin Ryan, Clare Hassey, Ciara Ryan, Margaret Ryan.
Date of Oral Hearing	None.
Date of Site Inspection	2nd and 3rd May 2024.
Inspector	Deirdre MacGabhann.

Contents

1.0 Introduction

1.1. This application, under section 37E of the Planning and Development Act, 2000 (as amended) (P&D Act), is for 9 no. wind turbines and associated infrastructure at Borrisbeg and adjacent townlands, near Templemore in County Tipperary.

2.0 Project Background

2.1.1. Under ABP-315851-23, the applicant, Buirios, requested pre-application consultations with the Board under Section 37B of the Planning and Development Act, 2000 (as amended) for the construction of 9 no. wind turbines at the subject site. The status of the proposed development was confirmed by the Board in a letter to the applicant dated the 10th of October 2023 that the development comprised strategic infrastructure within the meaning of section 37A of the P&D Act, and that an application for permission should be made directly to the Board. In the same correspondence, the Board provided the applicant on a list of Prescribed Bodies that copies of the application should be forwarded to. The subject application to the Board comprises the proposed windfarm and ancillary infrastructure, subsequent to the pre-application process.

3.0 Site Location and Description

3.1.1. The c.403ha application site is situated in the townlands of Borrisbeg, Eastwood, Ballycahill, Knockanroe, Clonmore, Graffin and Skehanagh, in north County Tipperary. The site lies c.2.5km to the northeast of Templemore Town, on land to the east of the N62 and to the northwest of the R433. Roscrea Town lies c.9km to the north of the site and county towns and villages lie in the wider area of the site, including Clonmore, Templetouhy and Borrisoleigh. County Kilkenny lies to the southeast of the site, Laois to the north east and Offaly to the north.

3.1.2. The application site is bound to the west (in part) by the N62 and county roads to the north west, the L-3248, and the L-7309 to the east, a county road off the R433. The L-7039-1 is a minor road/access lane, off the L-7039. Existing accesses to the site include farm entrances off the N62 to the west, the L-3248 to the north and the L-7039-1 in the southeast.

3.1.3. The development site comprises a mix of agriculture land, largely in pastoral use, and to a lesser extent forestry, with a mix of broadleaf and young coniferous trees. Fields are separated by hedgerows and mature treelines. The topography of the site is low lying with flat to gently undulating ground. Ground elevations range from c.120m OD on the north to c.105m OD on the south. The slope of the ground follows the River Suir which flows through the site on its eastern side. The Eastwood River, a tributary of the River Suir flows through the western side of the site.

3.1.4. The surrounding rural area is characterised by an largely flat agricultural landscape, with fields separated by hedgerows, trees, and small areas of woodland. To the west of the site, this landscape changes with more elevated topography, comprising Knockanora, Devilsbit, Kilduff and Borrisnoe Mountains. The summit of Devilsbit Mountain, at 479m, lies c. 6.5km to the west of the site.

3.1.5. Residential development, around the site, lies alongside the public roads surrounding the site. Third party submission are made by property owners to the north of the site, along the L3248, to the west of the site, off the N62, to the southwest of the site in Templemore, and from property owners to the east of the site.

3.2. Documentation

3.2.1. The application documentation includes:

- Planning application form, Landowner consent, Copy of letters to prescribed bodies, Site and newspaper notices.
- Drawings.
- An Environmental Impact Assessment Report (EIAR):
    - Volume 1 – Non-Technical Summary and Main Report.
    - Volume 2 – Photomontage Booklet.
    - Volume 3 – EIAR Appendices.
- Natura Impact Statement (NIS).
- Planning Report.

3.2.2. All documentation associated with the application as lodged can be found at the dedicated project website, https://borrisbegplanning.com. The application has been notified to the EIA Portal, with Portal ID no. 2023195.

4.0 **Proposed Development**

4.1.1. The proposed windfarm development is described in detail in Chapter 4 of the EIAR. In summary, a 10-year permission is sought for*:*

- 9 no. wind turbines, with an overall turbine tip height of 185m, rotor blade diameter of 163m and hub height 103.5m, associated foundations and hard standings (Figure 4-4). The wind turbines will have a total generating capacity of 63MW (enough to power c.47,304 households with electricity per year). Turbine foundations will be 25m wide and 4m deep. Where ground conditions are unfavourable, piles will be installed to foundation level (Figure 4-6 and 4-7).
- A thirty-year operational life, from the date of commissioning.
- Underground electrical cabling (33kV) to connect the turbines to each other and to the onsite substation (to be progressed separately under section 182A P&D Act, see below), and underground fibre optic cabling to connect each wind turbine and the met mast to the onsite substation. Electrical and fibre optic cabling will be run in cable ducts c.1.2m beneath ground level, along the sides of roadways and/or under roadways (Figure 4-10).
- Temporary construction compound (c.4,950sqm, drawing 220310-26, Temporary Construction Compound) located in the northern section of the site (Figure 4-1). Wastewater from staff toilets will be directed to a sealed storage tank, with all wastewaters tankered offsite by a permitted waste collector to wastewater treatment plants. Water supply will be by way of a temporary storage tank (for hygiene purposes).
- Temporary security cabin, to be located on a layby along the new proposed access road off the L3284. The entrance will be gated (Figure 4-14), and the cabin will serve as the check in and check out point for staff and visitors during construction (Figure 4-13).
- A meteorological mast (30m), free standing lattice tower equipped with wind monitoring equipment, and associated foundation and hardstanding (Figure 4-11).
- New gated site entrance to the wind farm site on the L-3248 (Drawing no. 220310-07, Site Layout sheet 1 of 5, and Figure 4-13). This will comprise the

main new entrance to the development site for construction traffic and staff vehicles and will be situated c.70m northeast of the N62. It will continue to provide operational phase access to the development and permanent agricultural use.

- Junction accommodation works and provision of a new temporary access off the L-3248, adjacent to the N62 to the northwest of the site, to facilitate turbine delivery/abnormally sized loads (Figure 4-1). This junction will be manned for the duration of these activities (and short-term use during operation if required).
- Upgrade of approximately 930m of existing site tracks/ roads, to include widening to 5m, and wider at bends/changes in direction and provision of c.6km of new site access roads, junctions, and hardstand areas (Figure 4-1, Figure 4-8 and 4-9).
- Upgrading of c.1.1km of the L-7039-1 within the development site (widening of c.460m and resurfacing entire route with surface finish to TCC Roads Section requirements).
- To facilitate the construction of the wind farm roads, two natural watercourses will be crossed, the Eastwood River by clearspan crossing, and the River Suir, by horizontal directional drilling under an existing bridge on the L-70391 (Figure 4-1). Culverts will be provided at field drain crossings (Figure 4-1), which will be sized for predicted peak flows and to allow mammals to pass through.
- Upgrade of existing L-7039/ L-7039-1 junction for secondary site access off the L-7039-1. This site access will facilitate the construction of the proposed grid connection, with the substation situated immediately adjacent to the L7039-1. It will also provide operational access for the maintenance of the proposed development and access to lands involved in the project.
- Borrow pit (area 24,351m^2), to be located 350m west of Turbine 1 and accessed using an internal road (Figure 4-17 and 4-18, Borrow Pit Details, EIAR Drawing nos. DANU-BBG-D003.1 and D003.2). The borrow pit will be used to obtain stone material for use during the construction phase of the proposed Project (c.90,000m^3 of stone is required for the construction of the wind farm, with c.70,000m^3 to come from the borrow pit and c.20,000m^3 from

local licenced quarries – Figure 4-20). Material will be extracted principally by rock breaking, but blasting may be used as a more effective method. Extracted material will be processed, crushed, and graded. Post construction the borrow pit will be fenced, backfilled with excavated spoil, then reseeded or left regenerate naturally.

- Spoil management areas within the site, to manage excess overburden generated during construction at the site, estimated to be c.121,600m^3 (Table 4-3). Spoil management areas are shown in Figures 4-21 and 4.22. Spoil will also be stored in linear berms along access roads. Total capacity of the spoil management areas is c.85,000m^3 and, with the backfilling of the borrow pit, is stated to be more than enough capacity to manage the total volume of spoil arising on the site. Spoil arising from the grid connection is indicated in Table 4-5 and will be managed within the site in the areas illustrated in Figures 4-21 and in alongside new access roads. Some of the spoil arising from the underground electrical cabling route will go to an appropriate licenced facility as required.
- Tree felling of c.4.22ha of forestry within and around the proposed wind farm footprint to allow for the construction of turbine bases, access roads, underground cabling, and other ancillary infrastructure. In addition to forestry felling, segments of hedgerow will require removal to facilitate construction of the wind farm roads and ancillary infrastructure. Tree felling includes c.3.44ha around T9 and c.0.78ha around T6 and removal of c.1.8km of linear vegetation, comprising c.0.945km of hedgerow and c.0.86km of treeline (Figure 4-15 and 4-16, Figure 1-1 Biodiversity Management Enhancement Plan, Appendix 6-4). Tree felling will be subject to a Limited Felling Licence (LFL) application to the Forest Service. The c.4.22ha of forestry that will be felled will be replaced/replanted in full as a condition of any felling licence. This may occur on any lands and would be subject to the statutory licensing process under the control of the Forest Service. The applicant proposes planting c. 1.8ha of natural woodland within the wind farm site along a segment of the Eastwood River (Figure 4-16) and c.5.17km of replacement hedgerow as part of the Biodiversity Management and Enhancement Plan (Figure 1-2, Appendix 6-4). For the balance, the applicant commits to

replanting c.2.42ha of conifer forestry outside hydrological catchment of the development site, with prior assessment by the Forest Service and with no potential therefore for cumulative impacts.

- Site drainage. Turbine locations and associated new roadways have been designed to avoid natural watercourses, with existing roads to be used where possible. Buffer zones of 50m around natural drainage features have been used to inform the layout of the development. Details of site drainage are set out in section 4.6 of the EIAR and Appendix 4-1a (Site Drainage Drawings). No routes of any natural drainage feature will be altered by the proposed development. Construction will be managed to divert and keep clean, clean flows. Drainage water from works areas will be collected, allowed to attenuate and be subject to controlled release. There will be no direct discharges to any natural watercourse or land drain, with all drainage waters being dispersed as overland flows. All discharges from the works areas will be made over vegetation filters at an appropriate distance from natural water courses and drains. Specific measures are proposed to manage drainage during tree felling activities (section 4.6.4.13). The effectiveness of drainage design measures will be monitored continuously by the Environmental Clerk of Works or supervising hydrologist on site, with works ceasing if siltation of watercourses arises and source identified.
- Biodiversity enhancement plan, including restoration of a 266m segment of the Eastwood river (restoration of a previously deepened and straightened channel to provide a meandering channel with riffle pool sequences), planting of 1.8ha natural woodland buffer (to river) and 5.17km of linear vegetation across the site (as above).

4.1.2. It is stated in the Planning Report the footprint of the development site is c.8.47ha or c.1.3% of the site area. I note that this is for the overall site area of 650ha (i.e. the EIAR study boundary, see below).

4.1.3. Construction will be managed in accordance with a Construction and Environmental Management Plan (Appendix 4-3, EIAR). It includes details in respect of drainage, spoil management, waste management, mitigation, and monitoring measures. The CEMP includes an outline Traffic Management Plan (section 3.4), to be agreed with

the PA in advance of construction and will include details for the delivery of turbine components to the site.

4.1.4. Dublin Port has been selected as the port of entry for turbine components, with delivery via the M7, exiting at junction 22 onto the N62 heading south for c.9.4km before reaching the proposed temporary access road at the northwest of the site (Figure 4-33). In section 4.5.2.1 of the EIAR it is stated that to facilitate the transport of turbine components off the M7 and onto the N62, minor accommodating works are required at junction 22 off the M7 which involves the temporary stoning up of verges, with all works being minor, temporary, and contained within the road carriageway. Once abnormal loads have been delivered, the areas will be reseeded.

4.1.5. It is estimated that the construction phase of the Proposed Project (wind farm and substation) is c.18-24 months.

4.1.6. During operation, on a day-to-day basis the wind turbines (and substation) will operate automatically, responding by means of meteorological equipment and control system to changes in wind speed and direction. Regular on-site inspections will also be carried out by the wind farm operations management company. It is estimated that 1 to 2 daily visits will be made to the site for minor routine maintenance and inspection.

4.1.7. If the proposed wind farm is developed under the Renewable Energy Support Scheme (RESS), the applicant would contribute €2 for each megawatt hour of electricity produced for the first 15 years operation of the wind farm. This would provide a Community Benefit Fund amounting to c.€400,000/pa. If the development is not progressed under RESS, the applicant will contribute €1 into the community fund for each megawatt hour of electricity produced by the wind farm (estimated annual fund of €200,000) for the entire operational life of the project.

4.1.8. Decommissioning is addressed in section 4.11 of the EIAR. The development will have an operational life of 30 years. Following the end of their useful life, the equipment may be replaced with new technology, subject to planning permission, or the wind farm will be decommissioned. Wind turbines and the met mast would be disassembled. Turbine and mast foundations would remain underground, be covered with earth, and allowed to revegetate. Site roadways will be retained and use for forestry/agricultural access. Underground cables will be removed, but

ducting left in situ. The grid connection infrastructure will remain in place and form part of the electricity grid. A decommissioning plan has been prepared (Appendix 4-4) and would be updated prior to decommissioning and are assessed in the EIAR.

Grid Connection

4.1.9. The development will be connected to the transmission system via a 110kV substation and supporting infrastructure. The grid connection has been the subject of pre-application discussions with the Board under ABP-317089 (to be concluded). It is the applicant's intention that the grid connection will be subject to a separate Section 182A. The location of the sub-station is indicated in drawings of the subject development (Figure 4-1 and 4-2). It is included as part of the 'Proposed Project' (wind farm and grid connection) which are located in the EIAR study boundary (the 'site') and assessed together in the EIAR.

4.1.10. The grid connection development comprises a permanent 110kV substation compound, temporary construction compound, 2km underground 110kV electrical cabling route (including joint bays and watercourse crossings) to run through the L-7039 road (870m) and new track through agricultural land (1.2km), and 2 no. new end masts to connect to the Ikerrin to Thurles 110kV OHL (Figures 4-23 to 4-30).

4.1.11. Construction of the grid connection cabling route will, if planning consent is granted, be undertaken by a statutory undertaker having a right or interest to provide services in connection with the proposed wind farm. Watercourse crossings will be by HDD (L-7039) and clear span bridge (agricultural land) (Figure 4-3).

4.2. Environmental Impact Assessment Report (EIAR)

4.2.1. The EIAR provides the following definitions used in the terms used in the EIAR,

- 'Proposed wind farm' – The 9 no. turbines and supporting infrastructure that is the subject of the application to the Board under section 37E.
- 'Proposed grid connection' – The on-site 110kV substation, temporary construction compound, underground cabling and connection to the existing 110kV Ikerrin to Thurles overhead line (OHL).
- 'Proposed project' – The proposed wind farm and grid connection, for the purpose of EIA, all of which are located within the EIAR study boundary (c.650ha).

4.2.2. The EIAR concludes that with the implementation of proposed mitigation measures, the proposed development would not give rise to significant environmental effects on any environmental parameter. The EIAR is available to view online at the dedicated website www.borrisbegplanning.com.

4.3. Natura Impact Statement

4.3.1. The applicant's Appropriate Assessment Screening Report identifies European sites in the area of the proposed development with the potential for likely significant effects. Potential for significant effects are screened out except for the Lower River Suir SAC (site code 002137).

4.3.2. The likely effects of the development on the qualifying interests of this site are considered in the NIS. The NIS objectively concludes, that with the implementation of proposed mitigation measures, the proposed project, individually or in combination with other projects and/or plans will not adversely affect the integrity of a European site.

5.0 **Planning history**

5.1. It is stated in the Planning Report that a search of the development site found no planning applications within the redline boundary. Appendix 2-1 of the EIAR identifies applications within 1km of the EIAR site boundary, wind energy development and other development within 25km of the proposed development (EIAR projects, pollutant release and transfer activity and ABP projects), and projects within the River Suir sub-catchment.

5.2. In the interest of brevity these developments are not repeated here. In summary, developments within 1km of the EIAR site boundary comprise largely small scale residential/business development and farm related development. Wind energy development within 25km is indicated in Figure 14-9 of the EIAR.

5.3. The EIAR also refers to a public website detailing a proposal for 11 no. turbines (tip height c.180m) at Brittas and adjacent townlands, Co. Tipperary. Given the absence of co-ordinates, at the time, for the proposed turbines and limited design details, an assessment of the proposal has not been included in the EIAR. The public website for the development indicates a location north of Thurles c.11km south of the proposed wind farm. The development has been the subject of pre-application discussions with the Board under ABP-315655 (strategic infrastructure) and ABP-318971 (design flexibility), both of which have been concluded (development is strategic infrastructure, decision on design flexibility issued). No application for the proposed development has yet been made to the Board and I consider that it is reasonably not included in the cumulative impact assessment.

5.4. Projects within the River Suir sub-catchment include are numerous and comprise urban and rural development in the wider area of the site, including north Thurles. There are no significant ‘Other’ projects in the immediate area of the site.

6.0 Legislative and Policy Context

6.1. The planning policy context for the development is set out in section 4 of the Planning Report and Chapter 2 of the EIAR. A summary of some of the key policy documents referred to are set out below.

6.2. **International/EU Policy**

- Kyoto Principle – Operationalises the United Nations Framework Convention on Climate Change (UNFCCC) and commits industrialised countries/economies to limit and reduce GHG emissions in accordance with agreed targets.
- COP21 Paris Agreement, COP25 Madrid, COP26 Glasgow, COP27 Sharm-el-Sheik – Conference of Parties to UNFCCC, to evaluate the implementation of the Convention and negotiate new commitments. The most recent COP27 reiterated the agreement to work towards a limit for global warming of well below 2ºC.
- European Green Deal – Introduced by the European Commission and provides a roadmap for Europe to becoming climate-neutral by 2050 and achieving a 55% cut in carbon emissions by 2030 (compared to 1990 levels).
- European Climate Law 2021 – Puts into law the objectives of the European Green Deal and sets out targets for reducing greenhouse gas emissions in Member States.
- REPowerEU – 2022 Communication from the European Commission to the European Parliament etc. to make Europe independent from Russian fossil fuels. Objectives include to move rapidly to 'clean energy' (including renewables) production.

6.3. **National Policy**

National Planning Framework Plan, 2018-2040

6.3.1. The NPF is the government's high level strategic plan for shaping the future growth and development of the country to 2040. National strategic outcomes (NSO) include transitioning to a low carbon and climate resilient society (NSO 8), to include renewable-focused energy generation and on-shore wind energy, and the strengthening of rural economies and communities (NSO 3). National Policy

Objective (NPO 23) facilitates the development of the rural economy, including through supporting energy industries, while noting the importance of maintaining and protecting the natural landscape and build heritage which are vital to tourism. NPO 55 promotes renewable energy generation at appropriate locations to meet national objectives towards achieving a low carbon economy by 2050.

National Development Plan, 2021-2030

6.3.2. The NPF was published alongside the NDP which provides a 10-year investment plan to supporting the implementation of the NPF. In Chapter 13 the document includes Strategic Investment Priorities for transitioning to a climate neutral and climate resilient society. Priorities include the Renewable Electricity Support Scheme auctions to deliver competitive levels of onshore wind energy.

Climate Action Plan

6.3.3. The Climate Action Plan 2023 (CAP23) is the second annual update to Ireland's Climate Action Plan 2019. The plan is prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, which introduced economy wide carbon budgets and sectoral emission ceilings, to achieve a 51% reduction in emissions by 2030 (relative to 2018 levels) and net zero emissions by 2050.

6.3.4. CAP23 sets out the sectoral emission ceilings approved by government in 2022 (Table 3.2) and sets out, in Table 12.2, KPIs to accelerate renewable energy generation. These include 6GW of onshore wind capacity by 2025 and 9GW by 2030.

6.3.5. Climate Action and Low Carbon Development (Amendment) Act 2021, requires in section 15(1) relevant bodies to, in so far as practicable, to perform its functions in a manner consistent with the most recent approved climate action plan, national long term climate action strategy, national adaption framework and sectoral adaption plans, the furtherance of the national climate change objective and the objective of mitigating greenhouse gas emissions (GHG) and adapting to the effects of climate change in the State. The definition of 'relevant bodies' includes public bodies, as defined under the Freedom of Information Act 2014, and includes An Bord Pleanála.

6.3.6. The Climate Action Plan 2024 (CAP24) was approved by government in May 2024. It reports on progress made and for the electricity sector again refers to the

ambitious targets of deploying 9GW of onshore wind, to reduce electricity sector emissions and enable broader electrification of other sectors. The Plan Climate also details the significant changes required to enhance the electricity grid's capacity and flexibility.

Ireland's Transition to a Low Carbon Energy Future (DECC, 2015)

6.3.7. This White Paper provides a complete energy policy update and sets out a framework to guide policy between 2015 and 2030. Its objective is to guide a transition to a low carbon energy system, which provides secure supplies of competitive and affordable energy to citizens and businesses.

Wind Energy Development Guidelines (WEDG) - Guidelines for PAs, June 2006.

6.3.8. These 2006 WEDG Guidelines provide advice to PAs for on-shore wind energy through the development plan process and in determining applications for planning permission. They provide consistency of approach throughout the country and state that whilst the development of renewable energy sources is supported, implementation must have regard for the environment notably including the conservation and sustainable use of biological diversity. Specific guidelines are provided on the environmental implications for wind energy and certain environmental topics, including design and siting, noise, shadow flicker and landscape effects. Recommendations are also made in respect of conditions.

Draft Wind Energy Development Guidelines (WEDG), 2019

6.3.9. The draft WEDG propose key amendments to the 2006 Guidelines in respect of noise, visual amenity, shadow flicker and community engagement. These include the application of more stringent noise limits in line with WHO noise standards together, a more robust noise monitoring system and reporting system and additional requirements in respect of shadow flicker, community consultation obligation, community dividend and grid connections. A minimum setback distance for visual amenity purposes of 4 times the tip height is also required subject to a mandatory minimum setback of 500m from sensitive receptors. The draft guidelines have not been issued under section 28 of the Planning and Development Act, 2000 as amended and, as per circular 05/2017, the 2006 Guidelines remain in place.

6.4. Regional Policy

Regional Spatial & Economic Strategy 2020-2032 for the Southern Regional Assembly

6.4.1. This document seeks to support the delivery of the NPF and NDP. Strategic objective 8, 'Low Carbon, Climate Resilient and Sustainable Society', aims to safeguard and enhance the environment through sustainable development, prioritising action on climate change across the Region, driving the transition to a low carbon and climate resilient society. Strategic objective no. 3 aims to strengthen rural economies and communities.

6.4.2. Strategic objective no. 8 is supported by regional policy objective RPO 99 '*to support the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines*'.

6.5. Local Policy

Tipperary County Development Plan (TCDP) 2022-2028

6.5.1. The TCDP sets out 'Core Ambitions' for the County:

- A climate resilient, sustainable, and low carbon county.
- Vibrant, living towns driving the regional and local economy.
- A strong rural economy, with diverse connected communities.
- A healthy natural environment, working landscapes and supporting infrastructure.
- A valued built and cultural heritage.

6.5.2. Policies of the Plan support these core ambitions and are referred to, as relevant, in the planning assessment section of this report.

6.5.3. Chapter 10, of the Plan deals with Renewable Energy and Bioeconomy. The Plan recognises renewable energy and the bioeconomy as important aspects of the rural economy and in Policy 10-1, supports and facilitates new development that will produce energy from renewable resources, including wind and associated enabling plant, subject to compliance with normal planning and environmental criteria and the provisions of the Tipperary Renewable Energy Strategy set out in Volume 3 of the

Plan. Table 10.1, Renewable Energy Targets for the TCDP period (to 2028), sets out an operational capacity target of 600MW for renewable energy against an approved/operational capacity of 475MW.

6.5.4. The Tipperary Renewable Energy Strategy is set out in Appendix 2, Volume 3 of the CDP. It requires, in Policy RE1, that renewable energy developments and associated supporting infrastructure be assessed for compliance with environmental standards and policies set out in the Plan and the Development Management standards in Chapter 10. Policy RE2 requires that renewable energy development integrate with and respect the character, sensitivity, and value of the landscape in accordance with the Tipperary Landscape Character Assessment 2016.

6.5.5. The Tipperary Wind Energy Strategy, 2016, is appended to the Energy Strategy. It supports, in principle and in appropriate locations, the development of wind energy resources in the county (Policy TWIND 1) and for such development to comply with the governments guidelines on wind energy development (Policy TWIND 3). The appeal site lies in an area of the county identified as an area that is 'Open for Consideration' to wind energy. Within such areas policy TWIND 4.1 to TWIND 4.12 apply. These require certain standards of development, including requirements in respect of landscape and visual effects, appropriate assessment, slope stability, cumulative effects, effects on the built environment, tourism, grid connection, flood risk, WFD and hydrological effect (lowland raised bog/peatlands).

Adjoining Planning Authorities

6.5.6. Counties Kilkenny, Laios and Offaly lie to the east, northeast and north of the development site respectively. Relevant County Development Plans for these counties are:

- Killkenny City and County Development Plan 2021 (KCCDP).
- Laois County Development Plan 2021 - 2027 (LCDP).
- Offaly County Development Plan 2021-2027 (OCDP).

6.5.7. KCCDP and LCDP afford protection to certain landscape character areas (based on the Landscape Character Assessment carried out), designated scenic or amenity areas, scenic routes and views and prospects of special amenity value. OCDP identifies areas of high amenity, areas of landscape sensitivity, key scenic vies,

prospects and key amenity routes and generally affords these areas protection from inappropriate development.

6.6. Natural Heritage Designations

6.6.1. The subject site is removed from natural heritage designated sites. The nearest European sites are Kilduff, Devilsbit Mountain SAC (site code 000934), c.4.5km to the west of the development site, and Lower River Suir SAC (site code 002137) c. 11km to the southwest of it. The nearest national site lies c. 2km to the southwest of the development site and comprises Templemore Wood proposed NHA.

7.0 Submissions and Further Information

7.1. The planning application to the Board under section 37E of the Planning and Development Act 2000 (as amended), was advertised in the national media and a local newspaper, site notices were erected, and the application circulated to the following bodies in December 2023. Responses by these, and third parties, are summarised below:

- Minister for Housing, Local Government and Heritage.
- Minister for the Environment, Climate and Communications.
- Tipperary County Council.
- Offaly County Council.
- Laois County Council.
- Kilkenny County Council.
- Southern Regional Assembly.
- Transport Infrastructure Ireland (TII).
- An Taisce.
- An Chomhairle Ealaion.
- Failte Ireland.
- The Heritage Council.
- Inland Fisheries Ireland (IFI).
- Uisce Eireann.
- Health Service Executive (HSE).
- Irish Aviation Authority (IAA).
- Commission for Energy Regulation.

7.2. Tipperary County Council

7.2.1. Tipperary County Council's Chief Executive Officer's Report was submitted to the Board on the 14th February 2024. The Report was subject to consultation with elected members, as per the requirements of section 37E of the P&D Act. It refers to the nature and extent of the proposed development, the location and description of the site, planning history of the site (none) and the following internal reports.

- District Engineer – Recommends a Stage 1 Road Safety Audit to focus on the temporary and permanent access routes onto the public road, during construction and operation, in the interest of road safety. As per the recommendations of TII and Department of Transport, recommend that (a) the associated HT cabling be placed in the carriageway as a last resort and all other viable alternatives be exhausted and (b) all cabling crossing culverts or streams be installed below the invert of the stream to ensure any longitudinal adjustment to the road surface are not compromised.
- Environment – Having regard to the application documentation, is satisfied that potential negative impacts can be mitigated. In the event of permission being granted, recommend that all environmental mitigation measures set out

in the EIAR, NIS and associated document, be implemented in full except to comply with recommended conditions in respect of phasing, advertisements, construction management, telecommunications, management of surface water, storage of fuels, wheel wash, pre-construction hen harrier survey, implementation of measures to protect water quality, and a programme of hydrographic monitoring after rainfall events from preconstruction to 3 years of operation.

7.2.2. The Planning Assessment refers to the European, national, regional, and local planning policy context for the development, Including the Tipperary Renewable Energy Strategy 2016, incorporated into the current County Development Plan 2022. The Report considers the development, situated in an area which is 'Open to Consideration' for new wind energy developments, to be acceptable in principle subject to proper planning and sustainable development and the guidelines set out in the Renewable Energy Strategy (policies TWIND 4.1 to 4.12). It further considers the development, subject to conditions recommended by Environment section to be acceptable in terms of effects on surface water, flood risk, water quality (WFD) and hydrology and hydrogeology. Under AA it considers that the development will not lead to detrimental effect on any Natura 2000 site but acknowledges that the Board is the competent authority in this regard. Under EIA, the Report considers that the EIAR submitted is sufficient to allow the PA to reach a reasoned conclusion on the significant effects of the proposed development. Further, having regard to the information provided, the PA broadly accepts the findings of the EIAR in respect of impacts on population and human health, biodiversity, ornithology, land, soils and geology, hydrology and hydrogeology, air, climate, noise and vibration, cultural heritage assets, landscape and visual impact, material assets (including traffic and transport). However, it makes the following recommendations:

- Hydrology and hydrogeology: Should cabling works be revised as recommended by District Engineer, the Chapter of the EIAR on hydrology and hydrogeology should be revisited.
- Landscape and visual impact. Impact of the development on the Devil's Bit landmark has not been adequately assessed. The applicant should demonstrate that the development will not impact on the setting of the

landmark on approach to Templemore from the east in the townland of Farranderry on the R443.

7.2.3. The report concludes that, subject to the certain considerations, the development is in accordance with the policies and objectives of the Tipperary County Development Plan 2022, will not impact on the visual amenity of the area, is acceptable in terms of drainage, presents no significant impacts on the conservation objectives of any Natura 2000 sites and presents no flood issues. The considerations referred to are (a) recommendations of District Engineer (above), (b) the Community Benefit Fund to be in line with the Renewable Energy Support Scheme, and (c) that the PA considers that the impact of the development on Devil's Bit landmark has not been adequately assessed.

7.2.4. **Prescribed Bodies**

7.3. **Department of Housing, Local Government and Heritage (DAU)**

- Archaeology – Notes that the aerial photography submitted identifies a previously unrecorded archaeological site within the proposed development site. It advises that the extent of the archaeological site, which is to be preserved *in situ*, must be adequately determined to ensure that it can be adequately protected. Recommends conditions to be attached to any permission to align with conditions no. C3, C5 and C6 of the OPR Practice Note PN03, with appropriate site-specific additions/adaptions.

7.4. **Transport Infrastructure Ireland**

- Refers to official policy regarding development management and access to national roads (Spatial Planning and National Road Guidelines for Planning Authorities, DoECLG 2012). It is unclear if the temporary access proposed at the junction of the N62/L3248 represents a new access, although temporary in nature, with potential to directly conflict with section 2.5 of the above guidelines.
- The proposed temporary access (N62/L3248) for abnormal loads does not adhere to design standards included in TII publications (*Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions*, DN-GEO-03060).

- DN-GEO-03030 (*Design Phase Procedure for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvement Schemes*) requires that a 'Design Report' be prepared for works impacting a national road. No 'Design Report' submitted for temporary access for abnormal roads, which represents a significant oversight.
- The applicant should consult with all relevant County Councils, PPP companies, Motorway Maintenance and Renewal Contracts in respect of the proposed haul route (for operational requirements/to ensure that the strategic function is maintained).
- Any proposed works to the national road networks to facilitate turbine delivery to comply with TII publications and be subject to a Road Safety Audit where appropriate.
- Mitigation measures should be included as conditions in any grant of permission. Any damage to the pavement of the national road network from abnormal length loads, to be rectified in accordance with TII standards and agreed in advance with the road authority (and referred to TII).
- It is unclear if the development of the site requires abnormal 'weight' loads. Any requirement for abnormal weight loads must obtain a permit for movement through each local authority area.
- Pre-development assessment of all structures on the haul route (national road) to confirm capacity to accommodate any abnormal loads proposed, with the road authority along the route confirming acceptability of any proposals. Any such requests to be referred to TII.

7.5. Other Planning Authorities

7.5.1. The following submissions have been made by neighbouring planning authorities:

- Kilkenny County Council – Refer to the notification by the Minister for State at the DHLGH of his intention to issue a Direction in respect of the Kilkenny City and County Development Plan 2021-2027, requiring that certain parts of the development plan shall not be taken to have come into effect (Chapter 11 Renewable Energy, Section 11.4 Kilkenny Targets; Section 11.5.1. Current status and targets; and Figure 11.4 Wind Strategy areas). The PA state that

they await further direction from the minister. The submission advises that (a) the visual impact of the proposed development and cumulative visual impacts with existing and permitted wind farms (including those in County Kilkenny) be taken into account, and (b) that any potential haul routes of wind farm components affecting the County shall include consultation with the County Council's relevant Municipal Engineer and Roads Department.

- Laois County Council – The Board should satisfy themselves that the ratio of tip height to hub height (where it is more than 1:1) is acceptable in terms of visual dominance. The zone of theoretical visible study area includes the western part of Laois. The Board should be satisfied that the proposed development has been robustly assessed in Chapter 14 of the EIAR.
- Offaly County Council – No observations.

7.6. Observers/ Public Submissions

7.6.1. There are 5 no. submissions from local residents:- Joan Delaney, H038, situated on the L-3248, to the east of the proposed site entrance; Ciara Ryan, H011, to the east of T2; Clare Hassey, dwelling situated in Templemore, to the south west of the development; John Delaney, H009, east of N62; Margaret Ryan, H063, to the east of T3; Martin Ryan, H031, east of T2. The following issues are raised in submissions:

- Inappropriate location – In proximity development/industrial development to residential development/densely populated area (Templemore).
- Impact on residential amenity:
    - Proximity to observers dwelling to site entrance and construction site for several years.
    - Noise - Including nightime. Adequacy of existing noise guidelines in 2006 Wind Energy Guidelines, timescale for new guidelines to ensure protection of amenities. Inappropriate to have different standards for participating and non-participating landowners.
    - Visual impact – Dominant and intrusive feature (size, scale and proximity of turbines), view of turbines from multiple windows, effects of view of mountains, visual impacts differ greatly with slightly different view at VP29, no photomontages from H011, constant red-light flickering. Deliveries in the night.

    - Loss of hedgerows/vegetation (at entrance to site) - Sound barrier, cushion to traffic vibrations, wind, privacy, and security.
    - Shadow flicker - Significant number of properties predicted to be potentially impacted, including from observers dwelling where numerous windows overlook the wind turbine site, no assessment of shadow flicker for same, inappropriate solution (blinds in home would reduce views with negative/adverse visual impact).
    - Loss of unspoilt natural beauty, vegetation, noise, air pollution, rats from building works.
- Structural damage due to proximity of major construction site.
- Devaluation of property.
- Proposed community scheme – Inadequate to compensate for effects e.g. of visual impact, shadow flicker, noise or alleviate concerns.
- Examination of alternatives (routing of cables along public road) – Not examined in detail as requested by Department of Transport in scoping response (Chapter 3, EIAR).
- NIS and local ecology – Potential for effects on proposed lands of high nature value and loss of biodiversity. Impact on environmental integrity of the area.
- Agriculture - Viability of farm for development opportunities, including wind energy, with wind take arising from the development. Safety of livestock.
- Lack of consultation and meaningful engagement. No direct contact from developer. Late notice of development (entrance beside dwelling), inability to attend public meeting (health constraints). Misleading to name the development Borrisbeg.
- History of flooding on adjoining lands. Increase in flood risk with development of hardstanding areas.
- Impact on health and wellbeing (including tinnitus). No longevity studies to indicate effects on health and wellbeing, living in close proximity to turbines (including effect of shadow flicker on health). Impact of dust on health condition and risk of carcinogenic particles.
- Interference with internet, radio, and cameras (to monitor calving etc.).

- Traffic effects. Has an audit of existing traffic volumes been carried out. Road safety, with use of L3248/N62 junction and hidden dip c.100m north of the junction. Access to the site should be from an alternative location.

Further Responses

7.7. The Board circulated the PA reports and third-party submissions in respect of the proposed development to the applicant. The applicant submitted a response to these on 26th March 2024, 28th March 2024 and 1st May 2024. The response largely refers to the information submitted in the planning application documents. In the interest of brevity these are not repeated here but addressed in the assessment section of this report, with the additional responses referred to as necessary.

8.0 **Assessment**

8.1. **Issues Raised**

8.2. Having inspected the subject site, examined the application details and all other documentation on file and having regard to relevant national guidance and local planning policies, I consider that the main issues raised in submissions relate to:

- Road safety.
- Location and installation of cabling.
- Landscape and visual impact (including Devil's Bit landmark and cumulative effects).
- Impact on unrecorded archaeology within the site.
- Impact on national roads.
- Alternatives site access.
- Inappropriate development in proximity residential development.
- Impact on residential amenity.
- Structural damage to properties.
- Devaluation of property.
- Impact on health and wellbeing.
- Adequacy of community benefit scheme.
- Impact on ecology and the environmental integrity of area.
- Viability of farm for development opportunities.
- Safety of livestock.
- Inadequate consultation and engagement.
- Flood risk.
- Interference with telecommunications equipment.
- Conditions of the permission.

8.3. These matters are addressed in the relevant planning, environmental impact assessment and appropriate assessment sections of this report.

9.0 Planning Assessment

9.1.1. Third parties argue that the proposed 'industrial development' is inappropriately sited in a rural and in proximity to a densely populated area (Templemore) and planning authorities and prescribed bodies recommend conditions to be attached to the permission.

9.2. Principle/Proximity to population/inappropriate industrial development

9.2.1. International, national, regional, and local planning policies support the development of renewable energy, including wind energy, in principle, in the interest of climate change, reduced GHG emissions and more recently energy security. National planning policies promote renewable energy at appropriate locations and having regard to the importance of protecting the natural landscape and built heritage (NPO 23 and 55, NPF).

9.2.2. Similarly, policies of the TCDP 2022, support and facilitate new development to produce energy from renewable sources, including wind subject to compliance with normal planning and environmental criteria and the provisions of the Tipperary Renewable Energy Strategy. The Renewable Energy Strategy, following detailed constraints analysis, sets out different Policy areas for wind energy, including preferred area, open for consideration and unsuitable areas. The proposed development is situated in an area designated as open for consideration. For such locations, Policies TWIND4.1 to TWIND 4.12, require applications to avoid visual clutter, and consider landscape sensitivity and capacity analysis set out in the Tipperary Landscape Character Assessment 2016, cumulative effects, compliance with the Habitats Directive, appropriate technical assessments in relation to slope stability, regard to impact on the built environment (particularly neighbouring property and amenity areas), tourism and recreational activities, consider flood risk, consider grid connection in EIAR and NISs and comply with the WFD.

9.2.3. Wind farm development in Ireland is typically located in rural areas and whilst man-made is not confined to any industrial area or zoning. In this instance, the proposed wind farm is situated approximately 2.5km to the northeast of Templemore (centre),

in a rural agrarian landscape. Residential properties on the edge of the town are closer to the wind farm, approximately 1.2km from the application boundary.

9.2.4. Whilst proximate to Templemore, the wind farm is proposed in a rural area, and as stated, in an area of the County that has been designated as 'Open for Consideration' for wind energy development, following detailed constraints analysis. Further, residential properties around the site typically lie alongside the public road network that surrounds the site, and are removed from it, with non-involved sensitive properties >740m from any wind turbine. Dwellings are also separated from the turbines by the mature rural landscape which contains substantial hedgerows, treelines and woodland providing substantial screening, particularly for development in the wider landscape. This is discussed further in the landscape section of the EIAR, and for the reasons stated, I am satisfied that whilst local landscape and visual effects will arise, and to a lesser extent cumulative effects with other wind farms, these will not be significant or inconsistent with the landscape sensitivity of the site set out in the Tipperary County Development Plan 2022. Further, for the reasons set out in the technical assessment (EIA and AA), I am satisfied that the proposed development will not give rise to significance adverse effects on residential amenity, tourism or recreational activities, flooding, water quality (WFD) or European sites and have properly considered slope stability and grid connection (in the EIAR and NIS).

9.3. Conditions of the Permission

9.3.1. In response to the application, the PA and prescribed bodies recommend certain conditions to be attached to the permission. These are included in the recommended conditions set out at the end of this report.

10.0 Environmental Impact Assessment

10.1. Statutory Provisions

10.2. The proposed development comprises a wind farm of 9 turbines with an output capacity of 63 MW. Schedule 5, Part 2, class 3(i) of the Planning and Development Regulations, 2001, requires EIA for '*Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts'*. The proposed development therefore requires EIA.

10.3. EIA Structure

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

> a. consisting of the preparation of an Environmental Impact Assessment Report (EIAR) by the applicant, the carrying out of consultations, the examination of the EIAR and relevant supplementary information by the Board, the reasoned conclusions of the Board and the integration of the reasoned conclusion into the decision of the Board, and
>
> b. including an examination, analysis, and evaluation, by the Board, that identifies, describes and assesses the likely direct and indirect significant effects of the proposed development on defined environmental parameters and the interaction between these factors, and which includes significant effects arising from the vulnerability of the project to risks of major accidents and/or disasters.

10.5. Article 94 of the Planning and Development Regulations, 2001 and associated Schedule 6 set out requirements on the contents of an EIAR.

10.6. This EIA section of the report is therefore divided into two sections. The first section assesses compliance with the requirements of Article 94 and Schedule 6 of the Regulations. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant

effects of it on the following defined environmental parameters, having regard to the EIAR and relevant supplementary information:

- population and human health,
- biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive,
- land, soil, water, air, and climate,
- material assets, cultural heritage, and the landscape,
- the interaction between the above factors, and
- the vulnerability of the proposed development to risks of major accidents and/or disasters.

10.7. It also provides a reasoned conclusion and allows for integration of the reasoned conclusions into the Boards decision, should they agree with the recommendation made.

10.8. **Compliance with the Requirements of Article 94 and Schedule 6 of the Regulations, 2001**

10.9. Compliance with the requirements of Article 94 and Schedule 6 of the Regulations is set out below.

Section 94 (a) Information to be contained in an EIAR (Schedule 6, paragraph 1)	
A description of the proposed development comprising information on the site, design, size, and other relevant features of the proposed development (including the additional information referred to under section 94(b).	The proposed development is comprehensively described in Section 4 of the EIAR and depicted in the associated drawings. Information is included on the site, design, size and features of the development, the associated substation and grid connection (not included in the application), haul routes and turbine delivery route. The EIAR also descrbies the construction, operation, and decommissioning phases of the development. I am satisfied that adequate detail has been provided to enable decision making.
A description of the likely significant effects on the environment of the proposed development (including the additional information referred to under section 94(b)).	An assessment of the likely significant direct, indirect, and cumulative effects of the development is carried out for each of the environmental parameters set out in the Regulatiions. I am satisfied that the assessment of significant effects is comprehensive and robust and enables decision making.
A description of the features, if any, of the proposed development and the measures,	These are included in each of the technical chapters of the EIAR and the associated appendices. They

if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b).	are brought together in Chapter 18 of the EIAR and in the CEMP.
A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment (including the additional information referred to under section 94(b)).	Chapter 3 of the EIAR considers alternatives in respect of do nothing (Table 3-1), site location (section 3.2.3), other renewable energy technologies (Table 3-2, offshore and solar), design (Table 3-3) and layout (section 3.2.5.2, constraints map, Figure 3-2 and 3-3 to 3-5 and Tables 3-4 to 3-6), borrow pits (Table 3-7) grid connection (Table 3-8 and 3.9) and transport options to the site (section 3.2.5.6). It provides the main reasons for selecting the proposed option(s) and a comparison of environmental effects. I consider, therefore, that the description of alternatives is reasonable, in the context of the proposed development, and satisfactory.
Section 94(b) Additional information, relevant to the specific characteristics of the development and to the environmental features likely to be affected (Schedule 6, Paragraph 2).	
A description of the baseline environment and likely evolution in the absence of the development.	A detailed description of the baseline environment is included in each of the technical chapters of the EIAR and I am satisfied, is sufficient to enable the assessment of likely effects and to enable decision making.
A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved	Forecasting methods and/or evidence to identify and assess significant effects are included in the EIAR, as required for relevant environmental topics. Technical difficulties are identified where necessary, and I am satisfied that there are no significant deficiencies that prevent decision making.
A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it.	Likely significant effects of the development on the environment, arising from its vulnerability to risks of major accidents and/or disasters addressed, are described in Chapter 16 of the EIAR and are adequate to support decision making.
A summary of the information in non-technical language.	A non-technical summary of the EIAR is provided by the applicant and satisfactorily describes the likely environmental effects of the development.
Sources used for the description and the assessments used in the report	Sources used for the description and assessment of environmental effects are included in each technical chapter of the EIAR.
A list of the experts who contributed to the preparation of the report	Experts are identified in section 1.8 of the EIAR and relevant qualifications in section 1.8.2. Further details are provided in each Chapter of the EIAR on the experts who prepared the technical assessment.

10.10. **Consultations**

10.11. Third parties raise concerns regarding a lack of consultation and meaningful engagement, for example, late notice for one party (due to health reasons), misleading naming of the development (Borrisbeg).

10.12. The application has been submitted in accordance with the requirements of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended), in respect of public notices. I note that these, the public notices, refer to all of the townlands in which the development is proposed. Further, a number of site notices have been erected at different locations around the site (see Drawing No. 220310 – 02, Site Location Map), including at the proposed entrances. In addition, the applicant has carried out a scoping exercise and has consulted with relevant authorities (including Tipperary County Council, ABP, NPWS and IFI) and the public. Responses to the scoping exercise are contained in Appendix 2-2 of the EIAR and summarised in Table 2-6. A full account of the public consultation exercise carried out is set out in Appendix 2-3. It includes details of information circulated to the public, information events held, and the main queries/concerns raised by the public. Submissions have been received from statutory bodies and third parties and are considered in this report, in advance of decision making.

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

10.14. **Compliance**

10.15. Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and the supplementary information provided by the developer is sufficient to comply with article 94 of the Planning and Development Regulations, 2001.

10.16. **Assessment of Likely Significant Effects**

10.17. In accordance with section 171A of the Act, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR, the associated drawings, documents/appendices and the submissions received and identifies, describes and assesses the likely direct and indirect significant effects (including cumulative effects) of the development on the environmental parameters set out in the Regulations and the interaction of these. Each topic section is therefore structured under the following headings:

- Issues raised.
- Examination, analysis and evaluation.
- The Assessment: direct and indirect effects.
- Conclusion.

10.17.1. **Population and Human Health**

10.17.2. **Issues Raised**

10.17.3. Issues raised in respect of population and human health relate to impacts on residential amenity, including those arising from construction noise and vibration, structural damage to buildings, loss of visual amenity, loss of hedgerows/vegetation, nighttime deliveries, shadow flicker, operational noise, devaluation of property, effects on health and wellbeing and adequacy of community benefit fund (to offset negative effects).

10.17.4. **Examination, analysis and evaluation**

Context

10.17.5. Chapter 5 of the EIAR deals with Population and Human Health. Associated appendices are:

- A5-1 – Wind Farms & Health Literature Review.
- A5-2 – EMF Booklet, EirGrid 2017.
- A5-3 – House Price Study – CXC Scotland 2016.
- A5-4 – Shadow Flicker Assessment Results – All Sensitive Properties.

Baseline

10.17.6. The development site lies in a rural area with a low-density population, and which has experienced a modest increase in population levels (Table 5-2 and 5-1). Land uses are predominantly agricultural with some residential/commercial development. The nearest primary school is Clonmore National School c.1.8km to the east of the site. The nearest train station is the Templemore train station, c.2.58km southeast of the site. Nearest amenities and community facilities are c.1.8km to 2km from the site in the surrounding area (see section 5.3.8.3 of EIAR).

10.17.7. There are 61 no. sensitive properties within 1km of the nearest turbine locations, including one derelict property (7 no. of these are involved landowners) (see Figure 5-3). The closest involved sensitive property (H005) is 614m from the T6 and the closest third-party sensitive property (H009) is 748m from T3 (Table 5-11). There are 6 no. sensitive properties within 100m of the grid connection, 5 of which also fall within 1km of the proposed turbines.

10.17.8. There are no tourist attractions within or adjacent to the site. The nearest site is Devil's Bit, a hiking and walking trail situated c.4km to the west of the site. Findings of research carried out in respect of tourist attitudes to wind farms (section 5.3.9.4) indicate no observable relationship between tourism employment and the development of wind farms (Scottish study) and a generally positive disposition among tourists towards wind development in the country (Failte Ireland Surveys 2007, 2012). The EIAR states latter study does also caution that it is important to take account of views of the one in seven tourists who are negatively disposed towards wind farms i.e. that good planning is required for wind energy developments. Research on public perception of wind farms is reviewed in section 5.3.10, with an overall positive approach indicated, including those affected/potentially affected by a wind farm in their locality and a preference for a small number of larger turbines rather than a larger number of smaller turbines. Section 5.3.12 addresses property values and wind farms. In the absence of Irish studies, it refers to international studies on the impact of wind farms on property values (USA and UK) which found no statistical evidence that house prices near turbines were affected by wind farm development. However, the studies did acknowledge that this overall finding did not conclude that there would never be a case of an individual home's value going down due to proximity to a wind farm. In section 5.3.1.3 property values, development

trends associated with grid infrastructure is investigated, with research indicating no evidence of any significant impact on residential or farm properties (value) or evidence of any significant impact arising from the construction or existence of transmission infrastructure in terms of patterns of settlement or land use. However, it was acknowledged that transmission infrastructure can be a local physical constraint on development.

10.17.9. Consistent with best practice guidelines, the EIAR refers to the baseline environment in respect of air quality, water quality, noise and vibration and traffic and transport and the vulnerability of the project to/from major accidents and natural disasters, (considered in detail in the relevant technical section of the EIAR) with the potential for significant changes to these parameters to impact on the health of the population.

Potential Effects

10.17.10. Likely significant effects of the development, as identified in the EIAR, are summarised in Table PHH 1 below.

Table PHH 1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• Site will continue to function as it does. No changes to land use or for potential impacts on population or human health. • Opportunity lost to capture part of Tipperary's renewable energy resource, generate local employment, diversify local economy, and restore segment of Eastwood River.
Construction	• Population (wind farm and grid connection): No impacts on population trends. Those working on the site will travel from the wider area. • Employment and investment (wind farm and grid connection): c.100 employees required during construction (80/20 wind farm/grid connection respectively), increase in local expenditure. Influx of new skills to area, transfer to local workforce/upskilling. Overall predicted significance of effect is slight. • Land use patterns & activities: o Wind farm – Slight and short-term interference with farming activities. o Grid connection – Short term effects on agricultural practices and disruption to traffic on L7039. • Property values (wind farm and grid connection): Having regard to conclusions from international literature, no impacts on property values are predicted.

	• Tourism (wind farm and grid connection): No tourism attractions in the vicinity of the site. Site is in intensive agricultural use, landscape subject to substantial human modification, views of site generally contained. Potential for short term effects on traffic and transport e.g. access to L7039. No significant effects predicted. • Residential amenity (wind farm and grid connection): Potential for impacts on residential amenity during construction from emissions to air, traffic, noise and vibration due to additional traffic and plant machinery. Potential for local traffic disruption with grid connection works. • Health: o Health and safety: Wind farm - Short term risk to health and safety with construction site and machinery used. Grid connection – Works in proximity to OHL are potential health and safety hazard for construction workers. Construction works may impact on electrical infrastructure/supply and give rise to traffic hazards along the local road. o Air quality (wind farm and grid connection) – Short term increase in dust and exhaust emissions and dust/dirt on public road. Borrow pit is c.250m from nearest involved landowner and c.350m from nearest non-involved. Short term, slight, negative impact on air quality. o Water quality (wind farm and grid connection) – Potential for release of suspended solids and hydrocarbons into surface and groundwaters, potential impact on public water supply and private wells. Indirect, negative, moderate, and temporary likely effect. o Noise and vibration (wind farm and grid connection) - Short term effects during construction from heavy machinery e.g. excavation and concrete pouring, extraction of stone from borrow pits. Potential for short term nuisance at sensitive properties, but with low magnitude on human health. o Traffic and transport: Wind farm – Temporary slight negative effect on traffic users on delivery routes, with a moderate impact on the short section of the L-3248 leading to the main access junction. Grid connection – Negative, temporary impact on existing road users of the L-7039 to be used for delivery of materials to construct substation. Brief interruption (c.20.5 days) for users of the L-7039 during installation of grid connection (rolling programme of 100m/day, backfilled each evening). Temporary and slight effects. o Major accidents and Natural Disasters (wind farm and grid connection): Risk of 'Contamination' of the site and 'Fire/Explosion' during construction identified in risk assessment (see Material Assets) with low level of risk. Low potential for significant natural disasters.
Operation	• Population (wind farm and grid connection): No impacts on population trends.

	• Employment and investment (wind farm and grid connection): Long term slight positive (2/3 jobs). Increase in household income (to landowners), rates, community contribution/Community Benefit Fund to support positive change in local area. Long term positive direct impact. • Land use patterns & activities (wind farm and grid connection): Small footprint, no impact on farming or forestry or other activities. No significant effects. • Property values (wind farm and grid connection): Having regard to research (above) no significant impacts on property values predicted. • Tourism: Wind farm - Site is removed from tourism attractions but will have an effect on the setting and character of the Devils Bit Mountain. Grid connection – Site removed from tourist attractions, will read in the landscape as an ancillary part of the wind farm development. End masts will blend in with adjacent 110kV masts. For both elements, literature review (above) indicates that wind farms do not deter visitors to tourist attractions or scenic landscapes where turbines are visually evident. Long term imperceptible negative impact on visitor experience to attractions in wider landscape. • Residential amenity: Wind farm - Project capable of meeting all required guidelines in respect of noise and shadow flicker (2006 WEDGs and draft 2019 guidelines). Turbine locations maximise separation distances to dwellings with no turbines within 740m of non-involved sensitive properties (reaching recommended 4 x turbine setback from properties). Grid connection – Substation site >100m from sensitive properties, will be screened by existing vegetation. End masts in landscape of low sensitivity and will appear as additional towers within an existing electricity line. • Health: o Health and safety (wind farm and grid connection) – Rigorous safety checks and continued maintenance to ensure no health and safety risks posed. Long term, slight impact on health and safety. o Noise and vibration – Wind farm - Predicted operational noise from turbines to be within 2006 WEDGs best practice criteria. No predicted significant effects. Grid connection – Predicted noise levels are low, with no significant noise emissions from substation. o Air quality (wind farm and grid connection): Daily visits from maintenance staff in LGV, infrequent generation of small volumes of hydrocarbon waste (maintenance). Moderate positive effect of development on air quality (reduction in carbon dioxide emissions). o Water quality (wind farm and grid connection): Minor maintenance works at site entrance and internal roads could give rise to small risk of release of hydrocarbons (site vehicles). Long term imperceptible impact on human health due to water quality.

	○ Traffic and transport: Low levels of operational traffic (one/two trips per day in LGV) with imperceptible effects. In the unlikely event that a major component fails, abnormal loads and HGVs will be required with likely short term and not significant effects. ○ Major accidents & natural disasters (wind farm and grid connection): Risk of 'Fire/Explosion' during operation identified in risk assessment (see Material Assets) with low level of risk. Low potential for significant natural disasters. ○ Shadow flicker: Wind farm – The level of shadow flicker has been predicted using the software package ReSoft Windfarm Version 5.0.2.2. It calculates the predicted shadow flicker for 140 sensitive properties within 10 rotor diameters of the proposed turbine locations (Figure 5-3). The model assumes worst case conditions (e.g. 100% sunshine during all daylight hours) and predicts shadow flicker at 86 sensitive properties where the WEDG 2006 daily limit of 30 minutes/day is exceeded, and 13 properties where the WEDG limit of 30 hour annual shadow flicker is exceeded (Appendix 5-4 and Table 15-11). In practice, the assessment considers that effects will be less as a result of natural screening, not all windows facing wind turbines. Overall long term slight negative impact.
Decommissioning	• Impact of works for decommissioning (Appendix 4-4) will be similar to construction, to a lesser extent and lesser duration.
Cumulative	• No significant effects on population and human health with the subject development. Therefore, no potential for significant effects from construction, operation or decommissioning of proposed development (wind farm and grid connection) with any existing, permitted, or proposed project/plan listed in Chapter 2 of the EIAR, including landscape effects. No wind farms proposed, permitted or in operation within a 5km radius of the site.

Mitigation

10.17.11. The EIAR refers to mitigation measures in respect of the environmental parameter considered, for example, measures to manage construction traffic, prevent emissions to air, pollution of water, minimise risks to health and safety. Proposed mitigation measures are discussed in more detail in the topic sections of this EIA. The measures referred to are typically standard good constructions/operational practices. Regarding noise and shadow flicker, the EIAR states that the proposed development can be brought inline to meet shadow flicker and noise thresholds imposed as part of a planning consent (under the WEDG 2006 or draft WEDG 2019), with noise primarily mitigated by control of operation of turbines. Mitigation measures for shadow flicker include, detailed measures are proposed to address this at sensitive properties, including an initial site visit to

determine level of screening, orientation of property and windows, incidence of shadow flicker, installation of site specific measures (e.g. window blinds, planting) and if required, use of wind turbine control measures (section 5.6.3.2.7 and associated tables) to adhere to adhere to 2006 WEDGs limit of 30 minutes per day or 30 hours per year.

Residual Effects

10.17.12. With the implementation of proposed mitigation measures, imperceptible to slight short term effects are predicted with no significant impacts arising from the construction or decommissioning of the proposed development. During operation long term positive direct and indirect benefits are predicted for local communities (Community Fund etc.), negative moderate long-term impact on residential amenity with a significant residual effect for a small number of sensitive properties located within 1km of the development who have open views of the turbines. Otherwise, operational effects are imperceptible to slight, including for shadow flicker.

10.17.13. **The Assessment: Direct and Indirect Effects**

10.17.14. I have examined, analysed, and evaluated Chapter 5 of the EIAR, all of the associated documentation and submissions on file in respect of effects on population and human health. I am satisfied that the applicant has presented a good understanding of the baseline environment, and that the key impacts in respect of likely effects on population and human, have been identified.

10.17.15. Further, I am satisfied that the key direct and indirect effects will be the short-term effects on people living, working, and travelling on the public road network in the area of the site during construction, for example by way of noise, dust, additional traffic, and short-term road closures. Some direct and indirect positive effects will also arise, with local economic effects. During operation, there is potential for operational noise, shadow flicker, landscape character and visual effects on residential amenity, with the greatest effects on those nearest to the site with clear views of it. There will also be long term positive effects for the community, with the community benefit fund.

10.17.16. Mitigation measures typically comprise standard good construction and/or operational practices, which if implemented comprehensively will offset predicted

significant effects, except for local landscape and visual effects. This, and the issues raised in submissions are considered in more detail below.

Noise and vibration from construction traffic, structural damage to buildings

10.17.17. The proposed development entails construction works with the associated introduction of construction traffic, the use of heavy plant and equipment, the potential for piled foundations (in some locations) and the potential for blasting and crushing of rock at the borrow pit. Noise and vibration effects are considered in the Air and Climate section of this report and for the reasons stated, including the distance of the borrow pit and turbines from nearest residential properties, relative modest extraction from borrow pit (e.g. if blasting), and the application of standard good construction practices to limit noise and vibration, I am satisfied that whilst short term effects will arise, these will not significantly affect the residential amenity of properties in the vicinity of the site.

10.17.18. However, I draw the Board's attention to the location of the proposed entrance in proximity to an existing residential property, situated on the L-3248 to the east of the proposed site entrance (observer Joan Delaney, H038) and concerns raised in respect of the potential for construction noise and vibration impacts on the property, including structural damage. Given the proximity of the dwelling to the proposed main access road, I consider that during the construction phase, there is potential for greater intensity of effects on this property. In response to the submissions, it is stated that the applicant is agreeable to further precautionary mitigation measures, such as temporary acoustic screening along the boundary and a pre/post structural condition survey of the property. These additional measures are not unreasonable and would further reduce noise and vibration effect arising from construction traffic in the interest of residential amenity. Should the Board decide to grant permission for the development, this matter can be addressed by condition.

Operational Noise

10.17.19. Third parties raise concerns regarding the potential for wind farm noise and the adequacy of the 2006 WEDG to protect amenities. The issue of noise is considered in the Noise section of this report, and I conclude that, on the basis of the information presented, the conservative analysis carried out, the predicted noise levels and criterion used for assessment, I am satisfied that whilst the noise

environment of the wind farm site and surrounding area will change, operational noise impacts will not be significant or adversely affect residential amenity.

Loss of visual amenity

10.17.20. The visual impact of the proposed development is considered in the Landscape section of this report. For the reasons stated I consider that proposed development will be visible from the public road network in the immediate area of the site, including from residential properties in proximity to it, which have open views of the site.

10.17.21. Research indicates that perceptions of visual impact differ from person to person. In this instance, submissions have been made by residents living to the north, west, southwest and east/northeast of the site and I note the concerns raised respect of loss of hedgerows screening the site (in proximity to proposed entrance), the scale, proximity and dominating effect of the turbines on dwellings, the view in some instance of turbines from multiple windows and the effect on mountain views and the different visual effects from different viewpoints not covered in the photomontages and constant red-light flickering.

10.17.22. Having regard to my inspection of the site and the surrounding area, I would accept that the greatest visual effects will be from the dwellings within c.1km of the development, including to the east/northeast and in the vicinity of properties H011, H031 and H036, particularly those that have more elevated and open views, of the site. I would also accept that VP12 (observer refers to VP29) is not representative of all views from this stretch of public road, but does give an accurate indication of scale/proximity/effect of landscaping etc.

10.17.23. Further, I would accept that the visual and landscape impact of the development from these viewpoints is substantial, with the turbines highly visible and substantially impacting on established local landscape character. Notwithstanding, given the distance of the dwellings from the wind turbines, all of which are set back at least 4x tip height (4 * tip height @185m = 740m, H009 is 748m from the T3, turbine diameter is 4m at base[1]), the presence of mature vegetation in the foreground that will offset these effects, the relatively small number of turbines

[1] Regardless of how the distance between T3 and H009 is measured (e.g. centre of turbine/edge of turbine), the turbine is >740m from the dwelling.

proposed, their layout out (i.e. stretched across the landscape, not clustered), and the reality of different perceptions in the community in respect of wind farm development, I do not consider that landscape and visual effects would be overbearing on NSLs nor are the effects sufficient to refuse permission for the development.

10.17.24. Regarding turbine lighting, as turbines will be at least 750m from the nearest sensitive receptor and at a hub height 103.5m, with lights orientated upwards, I do not consider that visual effects will be significant to cause nuisance or significant effects on residential amenity.

10.17.25. Replacement hedgerow planting is proposed to the east of the proposed access road to the site (Figure 1-2, Appendix 6-4). However, there are no proposals for replacement planting along the county road (e.g. behind the sightline), or for hedgerow strengthening between the development site and adjoining property. If the Board are minded to grant permission this matter could be addressed by condition.

Nighttime Deliveries

10.17.26. In one of the submissions the issue of disturbance from nighttime deliveries is raised. Whilst I accept that delivery of the turbine components to the site may give rise to some level of disturbance to dwellings in the vicinity of the temporary access to the site, in practice the deliveries take place over a very short period (24 days for nightime deliveries) and will be subject to detailed traffic management and controlled use of the temporary access.

Shadow flicker

10.17.27. The applicant's response to the issues raised states that the assessment has been carried out in accordance with the 2006 WEDG and the 'Best Practice Guidelines for the Irish Wind Energy Industry' (IWEA, 2012). It refers to the guidance in the 2006 WEDG which states that shadow flicker is not likely to be an issue at distances greater than 10 rotor diameters and to the recommended limits for shadow flicker for sensitive properties within 500m (<30 minutes/day; 30 hours/year).

10.17.28. As summarised in Table PHH 1 above, shadow flicker is assessed in the EIAR for all sensitive properties within 10 rotor diameters of the proposed development (1.63km) (Figure 5-3 and Appendix 5-4). The modelling exercise

carried out to identify the likely extent of shadow flicker is conservative in this respect and in that it assumes worst case conditions, for example, with 100% sunshine during all daylight hours, turbines always on, wind direction is worst case, and predicts some shadow flicker at 86 sensitive properties (>30 minutes/day) and 13 properties where the WEDG limit of 30-hour annual shadow flicker is exceeded (Appendix 5-4 and Table 15-11).

10.17.29. Having regard to the foregoing, and given the location of the development in a rural area with residential properties situated along the public road network, it is evident that the risk of shadow flicker arises at a relatively large number of properties and for a considerable number of days of the year. For example, for H011 and H063 (location of third-party observers) the development has the potential to give rise to shadow flicker for >30 minutes/day for 208 and 210 days of the year respectively.

10.17.30. Notwithstanding this, as stated in the EIAR and in response to submissions, in practice, effects of shadow flicker will be less because of natural screening, orientation of dwellings and/or not all windows facing wind turbines. To address the risk of shadow flicker the EIAR proposes a stepped approach to mitigation including site inspection for identification of screening and orientation of dwellings, on site modifications (with landowner agreement) and controlled shut down of turbines in certain condition (including if the landowner is not in agreement with site specific measures). With the application of these measures the EIAR predicts that the effect of shadow flicker can be controlled by wind turbine control measures (i.e. the operating mode of the turbine will be altered during certain conditions or times, or turned off) to comply with the WEDG 2006 limits of 30-minutes per day and/or less than 30-hours per or the 2019 draft WEDG which advocate eliminating shadow flicker from any existing dwelling or affected property.

10.17.31. I am satisfied therefore that the issue of shadow flicker can be dealt with, such that significant impacts do not arise. Further, in this instance and with an abundance of caution, given the proximity of the development to a relatively large number of dwellings, I consider that compliance with the 2019 draft WEDG guidelines is not unreasonable (as per the Board's standard condition).

Devaluation of property

10.17.32. Submissions raise concerns regarding the effect of the proposed development on property values. In considering this matter I am mindful of the evidence presented in Chapter 5 of the EIAR in respect of effects of wind farms and grid infrastructure on property values and the absence of evidence of consistent or measurable effects. I am also mindful of the research carried out in respect of public perception in respect of wind farms and generally (but not wholly) favourable trends. In the context of this evidence, I am inclined to consider therefore, that whilst there may in certain instances be a negative impact on property values, this is not a highly likely outcome. Alternatively, on the basis of the evidence presented it would appear that any given property has an equal chance of being perceived as either more or less attractive/valuable due to proximity of wind farm development.

Effects on health and wellbeing

10.17.33. Submissions refer to the potential for health effects as a result of the wind farm, due to its environmental effects (e.g. noise, shadow flicker, dust), including exacerbating tinnitus. The applicant, in the EIAR and in response to submission, acknowledges anecdotal reports of negative health effects on people who live very close to wind turbines. However, the applicant also refers to extensive international and national research which has been carried out and which concludes that exposure to wind farms does not trigger adverse health effects, including the 2017 HSE position paper which concludes that there is no direct evidence of adverse health effects arising from infrasound or low frequency noise, risk of seizure from shadow flicker or extremely low frequency electromagnetic radiation.

10.17.34. Having regard to the foregoing and the absence of significant environmental effects arising from the proposed development, as concluded in the EIAR and AA sections of this report, and on the balance of evidence, I am satisfied that the proposed development is not likely to have any significant adverse health effects. However, I would accept that visual impact may have a negative effect on stress and wellbeing by those affected and this may result in negative residual effect for a small number of residents.

Rats from Building Works

10.17.35. Works are proposed in a rural environment. The proposed development does not involve disturbance to existing structures, there is no substantial use of

generation of waste and the CEMP includes a waste management plan which provides for the appropriate disposal of food waste (e.g. daily canteen waste). Subject to implementation of this plan, I do not consider that there is a significant risk of rats arising from building works.

Community Benefit Fund

10.17.36. The applicant proposes a community benefit fund, ranging from approximately €400,000 to €200,000 per year depending on whether the project is developed under the Renewable Energy Support Scheme, with payments ranging from €1000/year to households within 1km of the proposed turbine locations (more for involved landowners) and represent a substantial contribution to the local community over the lifetime of the development, in line with the requirements of the RESS. Notwithstanding this conclusion, I would accept that for a small number of households financial gain would not address issues of local visual effects or antipathy towards the development.

10.17.37. **Conclusion**

10.17.38. Having regard to the foregoing, it is considered the main significant direct and indirect effects on population and human health are, and will be mitigated by:

- Short term direct and indirect negative effects arising from the construction phase on residential amenity and use of the public road, and longer-term the potential for noise, shadow flicker and landscape and visual effects, in particular for residents in proximity to the wind farm site, and with open views of it. These effects will be mitigated by the distance of the turbines from the construction site, implementation of standard good construction practices, management of construction traffic, distance of turbines from residential dwellings, intervening vegetation, and controlled operation of wind turbines in accordance with defined parameters, although local landscape and visual impacts will remain. Short term positive effects will arise for the local economy during construction and longer-term positive effects for the local community with the community benefit fund.

10.17.39. **Biodiversity**

10.17.40. **Issues Raised**

10.17.41. Concerns are raised by third parties regarding the potential for effects on the diverse and varied wildlife that the site supports (bats, pine martens, foxes and pheasants), the potential high nature value of the site, the cumulative effect of minor to moderate impacts on habitat, with consequences for loss of biodiversity and the safety of livestock. Observers request that the Board's assessment ensures beyond reasonable scientific doubt that the potential adverse effects on the sensitive area and adjacent lands, have been removed and that the protection of local habitats is preserved. In addition, the PA (Environment section) recommend that in the event of permission being granted, all mitigation measures set out in the EIAR be implemented in full.

10.17.42. **Examination, analysis and evaluation**

Context

10.17.43. Chapter 6 of the EIAR deals with Biodiversity. Associated appendices are:

- A6.1 Botanic Study of Proposed Project Footprint.
- A6.2 Bat Report.
- A6.3 Aquatic Baseline Report.
- A6.4 Biodiversity management Enhancement Plan.
- A4.3 Construction Environmental Management Plan.

10.17.44. The assessment of effects on biodiversity has regard to legal requirements and European, national and industry best practice guidelines. The assessment methodology includes desk study, scoping and consultation, consultation meetings with NPWS and IFI and field surveys including:

- Multidisciplinary walk over surveys (including for the optimum period for vegetation surveys/habitat mapping).
- Dedicated habitat and vegetation composition surveys, at targeted locations including at each element of the development e.g., turbine site, borrow pit, met mast, construction compounds (see Figure 6-1), in particular to identify any affinity to Annex I habitats.

- Fauna surveys (badger, otter, and bats).
- Aquatic surveys (including habitat assessment, biological water quality assessment, suitability for freshwater pearl mussel assessment, fish stock assessment by electrofishing, white clawed crayfish survey and macrophyte and aquatic bryophyte survey).
- Invasive species survey.

10.17.45. Key ecological receptors are defined in section 6.4.5.2 and comprise any ecological receptor determined to be of National or International, County or Local importance (Higher Value), following criteria set out in the NRA 2009 guidelines (Guidelines for the assessment of Ecological Impacts of National Road Schemes). Criteria for determining significance of effects is set out in section 6.4.5.4. This includes a definition of a significant effect as '*an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*'. No limitations are identified in the EIAR in the scope, scale, or context of the assessment.

Baseline

The proposed development site lies in a rural area, largely removed from sites of natural heritage interest (Figure 6-3, EIAR). The largely agricultural landscape includes mature treelines, hedgerows, improved agricultural grassland, mapped water bodies and associated numerous drainage ditches. Having regard to the detailed assessment studies carried out, the key ecological features identified in the EIAR in Table 6-19 are:

- Natural heritage sites in the zone of influence of the development i.e., Cabragh Wetlands pNHA. (NB The Board should note that other national sites have been included in Table 6-19 of the EIAR, despite being excluded from the likely zone of influence of the development in Table 6-4).
- Depositing lowland rivers within the site (local importance, higher value), as they connect to downstream waterbodies and the River Suir, a designated European site (international importance), including Shanakill, River Suir River, Eastwood River, Farranacahill River, Clonmore River and its tributaries (Lahagh 16 River and Strogue River), Unnamed River (Seg Code: 16_2934).

- Non-calcareous springs, situated in the northwestern section of the site (lower importance, higher value), Plate 6-16, Figure 6-6).
- Drainage ditches (local importance, higher value), due to potential conductivity with higher value watercourses.
- Aquatic and fisheries species, that are associated with the rivers located within and surrounding the site (lower importance, higher value) as they have high biodiversity value in the local context, due to the known populations of salmon, trout, eel and lamprey species along with otter.
- Broadleaved woodland (local importance, higher value), largely in the vicinity of T6.
- Hedgerows and treelines (local importance, higher value), in the vicinity of construction infrastructure.
- Wood Bitter-vetch (national importance), in the vicinity of T1 (c.60m to the east of T1 hardstand).
- Badger, otter, red squirrel, pine martin, bats, reptiles, and amphibians (local importance, higher value).

Potential Effects

10.17.46. Likely significant effects of the development are summarised in Table B1 below. Potential effects have regard to the detailed species/habitat surveys carried out. I note that the assessments carried out did not identify any significant limitations.

Table B1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• Land management practices likely to continue, general biodiversity of the site likely to remain as is. • Opportunity to capture part of county's renewable energy resource would be lost, and loss of opportunity to restore segment of Eastwood River.
Construction	• Natural heritage sites. The EPAs water maps indicated that the Suir_050 flows in a south to north direction through Cabragh Wetlands pNHA 001934, discharging into a Suir downstream of the development site. Consequently, it is my view that there are no potential for adverse effects on this national site.

	• Non-calcareous springs – Not referred to in section 6.7.1 and 6.7.2 of the EIAR. Situated c.11m south east of proposed access road. Potential for direct and indirect effects (damage/pollution). • Drainage ditches, rivers and streams (wind farm & grid connection). Loss of ditch habitat as a result of culverting works, associated with development. Approximately 13.4km of depositing/lowland rivers in EIAR boundary. Footprint avoids, where possible, sensitive watercourses (50m buffer). No instream works and no direct effects for the four watercourse crossings associated the wind farm site and grid connection works (clear span bridge or HDD, Figure 6-6). Restoration of river has potential to cause downstream deterioration of water quality and short term barrier to movement for aquatic species. Construction activity has potential to pollute watercourses on site (e.g. hydrocarbons, cementitious materials, siltation). Potential for therefore for indirect, negative, significant, temporary effects on surface water quality in downstream habitats and for water quality dependent species and on aquatic fauna (barrier effect). • Mixed Broadleaved woodland. Direct loss of c.0.78ha of mixed broadleaved woodland, associated with T6, with permanent and irreversible impact on habitat of local importance (higher value), with overall permanent moderate, negative effect (prior to mitigation). • Hedgerows and treelines. Loss of c.1.8km of linear habitat (c.0.945km of hedgerow and c.0.86km of treeline – Figure 1-1, Appendix 6-4) with permanent moderate loss of linear habitat of local (higher value) importance. • Wood Bitter-vetch. Situated c.60m to the east of T1 hardstand and located in a hedgerow. No suitable habitat between turbine and hedgerow for plant. Potential for accidental damage (worst case scenario) of supporting habitat, with permanent significant negative effect on the species. • Fauna. No significant effects on non-KER species due to small footprint, extensive area of habitat that will remain undisturbed and avoidance of most significant areas of faunal habitat (mixed broadleaved woodland and watercourses). o Otter. All major infrastructure avoids significant watercourses. No otter holts within the site (including in vicinity of Eastwood River to be restored). No instream works (clear span crossings or HDD at existing watercourses for wind farm site and grid connection). Potential for indirect effects on water quality from construction work (short term, reversible, moderate effect) and for disturbance during construction. Otter are crepuscular in nature and works will be during daylight hours. Literature review provides evidence of limited effects of human disturbance. Significant effects regarding habitat destruction, barrier effect, disturbance and mortality are not anticipated (absence of holts, habits of otter and literature review). o Badger. Potential for significant effect on badger due to direct mortality (tunnel collapse) and sett loss due to wind farm infrastructure construction (proximity to active and inactive setts). Potential significant effect on local badger population.

	○ Pine marten. Potential for significant effect due to Pine marten use of unoccupied badger sett (direct mortality and sett loss due to upgrade of access roads). Permanent, irreversible, significant effect on local Pine Marten population. ○ Bats. NBDC bat landscape map indicates moderate to high bat habitat suitability. Assessment of effects has regard to best practice guidelines. Potential for loss or damage to commuting and foraging habitat, loss of, or damage to potential roosts (no roosts identified) with reduced feeing opportunities/ displacement of effects, and potential for direct effects (disturbance/harm/death) from tree felling (broadleaved woodland and conifer forestry) and linear vegetation removal for proposed infrastructure. Tree felling includes a 50m buffer zone around turbines for the protection of bats from turbine blades (see Bat Report and best practice guidelines). Short term negative effects predicted (2-5 years) but no significant effect as a result of loss of commuting and foraging habitat, with extensive undisturbed habitat to remain, avoidance of most significant habitat (mixed broadleaved woodland, treelines, watercourses). Potential requirement for minor hedge or tree trimming as part of accommodation works for turbine delivery (small areas of common and widespread habitat). Existing watercourse crossings assessed as having negligible or low roost potential and will HDD proposed to ensure no loss of roosting habitat. ○ Amphibians. Potential for direct impact, via mortality, on Common Frog within the footprint of T6 and associated access roads.
Operation	• Effects on habitats. No land take and no potential for effects on habitats. Potential for habitat rehabilitation and enhancement with effects throughout the operational period of the development. • Rivers and streams. Increase in hardstanding may result in increased rate of runoff and pollutants (e.g. from vehicular use) to waterbodies, with potential for erosion and deterioration of surface water quality and likely significant effects on aquatic receptors including habitats (e.g. salmonids, lamprey, coarse fish, white clawed crayfish, European eel, aquatic invertebrates, molluscs and other aquatic species). Effect predicted to be negative, slight, indirect, long term, as all major infrastructure is >50m from any significant watercourse and small footprint. • Increase in c.60m of watercourse (with restoration of Eastwood River – Appendix 6-4), with increase in habitat quality and diversity, with long term slight positive effect on aquatic fauna and lowland depositing river at local level. • Fauna. Establishment of habitats of higher value for local faunal species with Biodiversity Management and Enhancement Plan, including river restoration area and woodland planting. Net increase in 1.8ha of woodland and replanting of 5.17km of linear vegetation with slight long term positive effects. Grass growing season to be extended in areas of the site (see ornithology), with slight, long term positive effect on small mammals and pollinators. ○ Bats. Potential for collision mortality, barotrauma and other injuries due to bats coming into contact with/close proximity to operational turbines. Site level collision risk for high collision risk

	species (Leisler's bat, Common pipistrelle and Soprano pipistrelle) predicted to be typically low, based on bat activity on site, predominantly agricultural grasslands with relative low levels of bat activity recorded. However, collision risk elevated at three locations, bat detectors D02, D04 and D06 (corresponding to T2, T4 and T6), for Leisler's bat and Common pipistrelle (High median activity recorded at these locations) with potential for significant effect on local bat population. Increase in artificial lighting has potential to have displacement effect.
Decommissioning	• Like during construction, but on a far lesser scale.
Cumulative	• No potential for cumulative effects with other permitted, consented or proposed wind farms within 20km of the proposed development, non-renewable energy developments in the Suir sub catchment, or relevant land use plans in the area of the site, as the development will not give rise to significant effects on biodiversity and no potential for additive impacts e.g. having regard to type of existing/permitted/proposed development, scale and proximity to development site.

Mitigation

10.17.47. The EIAR proposes a suite of mitigation measures to offset potential effects on biodiversity, for all phases of the development. These are indicated in section 6.7.2 and 6.7.3 of the EIAR, with cross reference to other technical chapters of the EIAR (e.g. hydrology) and to appendices to Chapter 6. Mitigation measures are also summarised in Chapter 18 of the EIAR and in the CEMP.

10.17.48. The mitigation measures include standard best practice construction measures practices, in particular for the management of surface water and to prevent the release of contaminants (see section 4.6 and Chapter 9 of EIAR and Water section of EIA). Additional site-specific measures include a Biodiversity Management and Enhancement Plan. This includes the following measures:

- Restoration of a portion of the Eastwood River within the site. Approximately c.240m of the river will be restored and after restoration it will extend to c.300m (Appendix 6-4, EIAR and Figure 2-5 of the Appendix). The entire riparian corridor will be fenced (c.1.8ha) to prevent access by livestock and will be planted with native woodland species. This will provide a net increase of c.1.02ha of woodland within the site.
- Compensatory planting of c.5.17 km of linear vegetation to offset the loss of 1.8km of hedgerow and treeline habitat (Appendix 6-4, Figure 1-2). This

will provide a net gain of c.3.37 kilometres of linear habitat and will maintain and enhance habitat connectivity.

- Post construction monitoring of the restored section of river, woodland and compensatory hedgerow planting will be carried out for 5 years.
- Installation of Pine Marten boxes and bat boxes at appropriate locations (Appendix 6-4). Post construction monitoring will take place for 3 years and include any need for future monitoring.
- Grassland management measures, associated with ornithology, which will have a beneficial effect on biodiversity.

10.17.49. Other site-specific mitigation measures include:

- Consultation with IFI in advance of watercourse crossing works and adherence to IFI and UK guidelines on the protection of fisheries during construction works.
- Provision of fenced buffer to treeline habitat east of T1 where Wood Bitter-vetch occurs. No works in this area. Follow up survey to ensure species not disturbed.
- Pre-commencement survey of works areas (to assess any changes in the environment) for otter, badgers, bats (tree survey) and Common Frog (in footprint/area of T6). If active holt/sett/roost/presence of Common Frog is identified, appropriate exclusion zone applied (physical limits/timing of works), appropriate felling activity under licence (see Table 6-28, EIAR) or translocation under licence (Common Frog). Temporary exclusions of inactive badger sets near works, in line with TII guidelines.
- Prior assessment by ecologist of trees/hedgerows to be trimmed for minor accommodating works to facilitate transportation of turbines (bat habitat).
- Linear vegetation removal designed to retain suitable treelines where possible (bat roost potential).
- Measures to minimise noise during construction, adherence to Dark Sky Ireland Lighting Recommendations and directional lighting to be used to prevent overspill onto woodland/forestry (disturbance of bats).
- Buffer around wind turbines to all habitat features used by bats (50m), blade feathering (pitching the blades out of the wind, to reduce rotation

speeds below 2 rpm while idling), and post construction monitoring and mitigation strategy, in line with NatureScot 2021 Guidance (in particular, Appendix 5 case study of effective operational curtailment strategy) for collision risk of bat species, with curtailment programme in line with relevant guidelines, and potential increase in buffers if significant bat fatalities encountered.

Residual Effects

10.17.50. With the implementation of proposed mitigation measures, no significant residual effects on key ecological receptors are predicted. Impacts on European sites are considered in the AA section of this report. Further, the restoration of a short section of Eastwood River is predicted to have a slight long-term positive effect in water quality and river morphology within this segment of the river and provide enhanced habitat for a variety of aquatic species and otter. The planting of 1.8ha of native woodland species, which has been designed to integrate with the proposed river restoration and create suitable riparian habitat along this segment of the Eastwood River, will have additional positive effects on biodiversity.

10.17.51. **The Assessment: Direct and Indirect Effects**

10.17.52. I have examined, analysed, and evaluated Chapter 6 of the EIAR, all of the associated documentation (notably the comprehensive Bat Report, Aquatic Baseline Report and Biodiversity Management and Enhancement Plan) and submissions on file in respect of effects on biodiversity. I am satisfied that the applicant has demonstrated a good understanding of the baseline environment and the likely environmental effects of the development.

10.17.53. The proposed development is situated largely in agricultural land, with the key ecological receptors comprising watercourses, broadleaved woodland, treelines and hedgerows and associated fauna and flora. The main significant effects direct and indirect effects comprise:

- Loss of broadleaved woodland, treelines and hedgerows arising from the footprint of the development (including wind farm infrastructure, access roads etc.).

- The potential for increased loading and pollution of waterbodies with adverse effects on downstream water quality dependent habitats and species (construction and operation).
- The potential for significant direct and indirect effects on protected flora (Wood bitter vetch) and mobile species (e.g., otter, badger, pine marten, bats and amphibians) during construction.
- The risk of collision by bat species during operation.

10.17.54. I note that the EIAR identifies a non-calcareous spring, c.11m to the southeast of a proposed access road in the north of the site (Figure 6-5). This is at risk of damage and/or pollution and is not specifically addressed in the EIAR and would benefit from protective fencing (this could be addressed by condition).

10.17.55. Notwithstanding the foregoing, having regard to the application of standard best practice mitigation measures, as set out in the EIAR, the site-specific and species-specific measures referred to above, and proposals for replacement hedgerow and woodland planting and restoration of a short section of Eastwood River (which is supported by IFI), I am satisfied that significant effects on biodiversity will not arise. Further, the restoration of a section of the Eastwood River, with the improvement of its hydromorphology and the associated woodland planting, and extended grass growing season within areas of the site (see Ornithology), and the on-going monitoring of the efficacy of mitigation measures, will provide a long term positive local effect on biodiversity. With regard to livestock, wind farms are not associated with any adverse effects on livestock and farming typically continues in the vicinity of wind farms and within the same landholding.

10.17.56. I note that the EIAR states that the borrow pit will be backfilled then reseeded or left to vegetate naturally, with a stock proof fence erected after construction materials have been extracted to prevent unauthorised access. Similarly, the spoil storage areas will be vegetated or allowed to revegetate naturally. If the Board are minded to grant permission, I would recommend that these areas (which are largely connected by hedgerows within the site) are naturally revegetated and actively managed appropriately for nature conservation for the duration of the development, in the interest of biodiversity. This could be addressed by condition and include the treatment of spoil management areas to be located alongside new or upgraded

access roads (Figure 4.8 and 4.9, EIAR) and provide an integrated approach for the management of habitats in the interest of biodiversity. As per the request of the PA I would also recommend that permission be subject to implementation of the full suite of mitigation measures for biodiversity and related environmental topics (e.g., hydrology).

10.17.57. With regard to cumulative effects, I am satisfied that there will be no potential for significant cumulative effects on biodiversity, given the absence of significant effects likely to arise from the proposed development, and the potential for positive effects, the absence of substantial permitted or proposed development in the area of the site, and the distance of the development from other wind farms.

10.17.58. **Conclusion**

10.17.59. Having regard to the examination of environmental information in respect of biodiversity, in particular the EIAR and associated technical reports, and the submissions from the planning authorities and prescribed bodies, it is considered that the main significant direct and indirect effects of the development on biodiversity are the loss of broadleaved woodland, treelines and hedgerows arising from the footprint of the development, the potential for increased loading and pollution of waterbodies during construction and operation, with the risk of adverse effects on downstream water quality dependent habitats and species, the potential for significant direct and indirect effects on mobile species during construction and the risk of collision by bat species during operation. Further, it is considered that these impacts will be mitigated by the application of best practice construction methodologies, as set out in the project documentation, the application of proposed site- and species-specific mitigation measures and with the implementation of the proposed Biodiversity Management and Enhancement Plan, such that no significant adverse effects arise.

10.17.60. **Ornithology**

10.17.61. **Issues Raised**

10.17.62. Third parties raise concerns regarding the potential for effects on the diverse and varied wildlife that the site supports, including barn owls, kestrels, sparrow hawk and buzzards. Further, the Environment Section of the PA recommend a number of conditions for any permission granted. These include that prior to carrying out any construction works between mid-March and mid-August a survey for breeding hen harriers shall be carried out (by competent expert), to cover an area within 500m of proposed works, with no works to be carried out if a breeding site is found, except with the written approval of the NPWs.

10.17.63. **Examination, analysis and evaluation**

Context

10.17.64. Chapter 7 of the EIAR deals with Ornithology. Associated appendices are:

- A7.1 – Target list (bird species).
- A7.2 – Survey Effort.
- A7.3 – Summary of survey records.
- A7.4 – Survey data[2].
- A7.5 – Bird Survey Data (confidential).
- A7.6 – Collision Risk Assessment.
- A7.7 – Bird Mitigation Plan.
- A7.8 – Bird Monitoring Programme.

10.17.65. The Chapter defines the terms 'Zone of Influence' as the area within which potential effects on individual ornithological receptors are anticipated (varies by species) and 'Key Ornithology Receptors' as species occurring within the ZOI upon which potential impacts are anticipated and assessed.

1.1.1. [2] Raw survey data is presented in Appendix 7-4 (by species) together with flight records (associated Figures). I note there is no flight data for grey wagtail, meadow pipit, redwing or swift all of which were observed in site surveys. However, data that is available describes how these species use the site or the wider area (including, for example, distance from nearest turbines) and all the bird species are considered in section 7.4 of the EIAR, Receptor Evaluation. I am satisfied therefore that the omission of this data is not significant in terms of being able to draw conclusions in respect of likely environmental effects.

10.17.66. The assessment of effects on ornithology has regard to European and national legislation and guidance documents in respect of EIA and Scottish and national guidance documents for assessing the effects of on shore wind energy developments on bird (section 7.1.2 and 7.2.5). The assessment methodology includes desk study, consultation (scoping) with relevant statutory and non-statutory bodies, identification of target species and field surveys. Field surveys were carried out over three years, September 2020 to September 2023 (to include three breeding seasons and three non-breeding seasons). Survey work was carried in accordance with referenced methodologies and included:

- Vantage point surveys (Figures 7-1, vantage point locations, and 7-2 vantage point viewsheds).
- Winter walkover and breeding walkover surveys (Figures 7-3, walkover transect routes).
- Waterbird distribution surveys (Figure 7-4, waterbird distribution survey).
- Breeding raptor surveys (Figure 7-5, breeding raptor locations).
- Multidisciplinary walkover surveys.

10.17.67. No limitations are identified in the EIAR in the scope, scale, or context of the assessment. Having regard to the detailed assessments on file and the referenced methodology used to carry out the assessment, I am satisfied that there are no significant limitations to the assessment.

Baseline

10.17.68. The proposed development is situated within 15km of two Special Protection Areas. Effects on these European sites is considered in the AA section of this report. No nationally designated sites of ornithological significance lie occur within the potential ZOI of the proposed development. This is defined as 15km of the development site but includes review of sites in the wider area and SNH guidelines 'Assessing Connectivity with SPAs'. The development site lies in an area designated as having Low sensitivity to wind energy (BirdWatch Irelands, Bird Sensitivity Mapping Tool). The nearest area of high sensitivity is c.37km to the northwest. A list of 'target species' has been compiled in the EIAR, Table 7-10. These comprise species which are likely to occur within the zone of influence of the proposed development, based on national datasets, initial site visits and

consultations and, consistent with SNH 2017 guidelines ('Recommended bird survey methods to inform impact assessment of onshore wind farms'), are limited to those species which are afforded a higher level of legislative protection and/or as their behaviour makes them more subject to the impact of wind farms, and/or there is no pathway for significant effects to arise (section 7.2.3, EAIR). Bird surveys have been designed around these target species, and include field surveys, vantage point surveys, winter walkover surveys, breeding walkover surveys, waterbird distribution surveys, breeding raptor surveys and multidisciplinary walkover surveys.

10.17.69. Target species are indicated in Table 7-10. I note that Table 7-1, excludes Yellowhammer a species identified in Appendix 7-1 as a target species recorded during surveys (Table 7-1, Appendix 7-1). Use of the site by this species is evaluated in section 7.3.7.23 of the EIAR and, on the basis of a single yellowhammer being observed outside of the site on one occasion, it is considered that there is no population of ecological significance using the site. Having regard to the limited use of the development site by the bird species, location of the site in an area identified as having Low sensitivity to wind energy and the guidance by NatureScot that passerine species are not typically impacted by wind farms, this conclusion is not unreasonable.

10.17.70. In section 7.4, target species are evaluated having regard to their observed use of the site and their occurrence on the site in terms of the size of the national and/or regional population and taking a precautionary approach where such data is not available. Key ornithological receptors (KOR) are identified from this analysis, with species either included or excluded (Table 7-11). For example, there is no population of ecological significance of Barn Owl on the development site due to limited use of the site and distance of traditional nest site from the development site (>2km) and it is not identified as a KOR. Key ornithological receptors are summarised below.

Table O1: Key Ornithology Receptors

County Importance (Conservation status)	***Local Importance (Higher value) (Conservation status)***
• Hen Harrier (Annex I Birds Directive & Raptor).	• Kestrel (Red list & Raptor). • Buzzard (Raptor). • Sparrowhawk (Raptor).

• Kingfisher (Annex I Birds Directive & SCI River Nore SPA). • Golden Plover (Annex I Birds Directive & Red list). • Merlin (Annex I Birds Directive & Raptor). • Peregrine Falcon ((Annex I Birds Directive & Raptor). • Little Egret (Annex I Birds Directive). • Whooper Swan (Annex I Birds Directive). • Lapwing (Red list). • Snipe (Red list).	

10.17.71. Having regard to the survey data which is available on file, and which identifies what species are using the development site, how and when they are using it, the conservation status of these species and their national/regional populations, I am satisfied that the key ornithological receptors have been identified.

Potential Effects

10.17.72. Likely significant effects of the proposed development, as predicted in the EIAR, in advance of any mitigation measures, are summarised in Table O1 below. No pNHA/NHA were considered as ornithological ecological receptors in their own right due to the separation distance from the proposed development (c.7km to nearest NHA, Nore Valley Bogs NHA) and the absence of connectivity.

10.17.73. The assessment of potential effects has regard to the Collision Risk Assessment presented in Appendix 7-6 of the EIAR. I note that the CRA has been undertaken in accordance with NatureScot guidelines and utilises a Random Flight Model, reflecting the flight patterns observed on site by all species.

Table O1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• The proposed site would continue to be managed under the various management practices, with the character of the bird community, including the KORs identified, remaining much as described in the baseline ornithological conditions. • Opportunity to capture part of county's renewable energy resource would be lost, along with associated benefits, and loss of opportunity to restore segment of Eastwood River and establishment of a natural wooded riparian buffer.

Construction	Direct habitat loss. • Hen Harrier (wintering). Birds hunting in farmland (limited use of site). Extensive areas of similar habitat to remain. Likely long term constant slight negative effect. • Kingfisher (all seasons). No recorded use of the site (flying over only). Potential for restored habitat along Eastwood River to benefit species (suitable riparian hunting habitat). Likely constant not significant negative effect. • Golden plover (wintering and passage). Species recorded roosting, foraging and flying within the site (winter). Up to 187 birds using the site (farmland grass fields for foraging and roosting) and up to 576 flying over the site. Farmland not a scarce resource and abundance of habitat in surrounding area. Likely long term constant slight negative effect. • Merlin (wintering and passage). Birds recorded hunting within the site (in farmland and along field boundaries). Extensive areas of habitat to remain, small footprint of development. Likely long term constant slight negative effect. • Peregrine falcon (all seasons). Birds frequently recorded hunting within the site (winter and breeding season) in farmland. Farmland not scarce, small footprint of development, abundance of habitat in surrounding area. Likely long term constant slight negative effect. • Little egret (all seasons). Limited use of site in winter season and foraging and flying in surrounding area. Potential for effects of direct habitat loss is low. Likely long term constant not significant negative effect. • Whooper swan (wintering). Species recorded foraging once within the site during the winter. Species not considered to be dependent on the site. Likely long term constant not significant negative effect. • Kestrel (all seasons). Recorded hunting regularly within the site, fledglings and probable breeding pair also recorded within the site. No breeding territory identified within the site. Observed using farmland for hunting. Unlikely to be dependent on site habitat (wide ranging and generalist nature, farmland not scarce, small footprint of development). Likely long term constant slight negative effect. • Lapwing (all seasons). Regularly recorded during winter season foraging and roosting within the site (max. 375 birds). Breeding territory identified in NW of site (one pair). Uses farmland fields (inc. for breeding). Layout of turbines avoids breeding territory. Extensive areas of similar habitat will remain in the winter season and in surrounding area. Likely long term constant slight negative effect. • Snipe (all seasons). Regularly recorded using habitats in the site, farmland grassland. Farmland not scarce and extensive areas of similar habitat will remain, small footprint of development. Likely long term constant slight negative effect. • Buzzard (all seasons). Regularly recorded hunting with the site, breeding territory identified within the site and 800m, 820m, 1.5km and 1.8km from nearest proposed turbine. Fledglings also

	recorded. Species is a wide-ranging generalist using farmland within the site. Extensive areas of similar habitat to remain. Small footprint of development. Likely long term constant not significant negative effect. • Sparrowhawk (all seasons). Regularly recorded hunting, feeding and displaying within the site. Breeding territory identified within the site (670m from nearest turbine). Species is a wide ranging generalist using farmland within the site. Extensive areas of similar habitat will remain, footprint of development is small. Likely long term constant not negative effect. Disturbance. • Hen Harrier (wintering). Displacement during wind farm construction can occur 500m to 1km. Assume disturbance will occur, however, low number of records within 500m of works area, species not dependent on site or surrounds for hunting. Farmland not scarce. Likely short term, frequent, slight negative effect. • Kingfisher (all seasons). Species recorded flying within the site during breeding season and hunting and flying during the winter season (>800m from nearest turbine). Assume that temporary disturbance will occur around the site during construction. Likely short term frequent slight negative effect. • Golden plover (wintering and passage). Research indicates no significant negative effect of construction works on breeding golden plover (low number of studies) and others that species can be disturbed up to 500m from humans. Assumes temporary disturbance during construction. Farmland not a scarce resource. Likely short term frequent slight negative effect. • Merlin (wintering and passage). Few studies on disturbance, some suggest disturbance up to 200m from humans. Temporary disturbance assumed around construction sites. Farmland is not a scarce resource. Likely short term frequent slight negative effect. • Peregrine falcon (all seasons). Birds frequently recorded hunting and flying within the site. No breeding territory within 2km of survey area. Research indicates species can be disturbed up to 750m from humans. Habituation has been documented. Assume a temporary disturbance, farmland plentiful in surrounding area. Likely long term frequent slight negative effect. • Little egret (all seasons). Limited use of site and foraging and flying in surrounding area. Assume a temporary disturbance during construction. Likely short term frequent not significant negative effect. • Whooper swan (wintering). Low number of foraging within the site, occasional foraging and flying within 500m of site. No roosting. Few studies on disturbance, with some evidence of disturbance up to 600m from humans. Assume a temporary disturbance during construction. Likely short term frequent not significant negative effect. • Kestrel (all seasons). Recorded hunting regularly within the site, fledglings and probable breeding pair also recorded within the site.

	Few studies on disturbance, with some evidence of disturbance up to 200m from humans during breeding. Assume a temporary disturbance during construction. However, species not dependent on site, nearest breeding territory identified 3km from nearest turbine (no impact at this distance). Likely short term frequent not significant negative effect • Lapwing (all seasons). Research indicates no significant negative effect of construction work on breeding lapwing populations (number of sites studied low). Assume a temporary disturbance during construction. Farmland not a scarce resource locally and abundance of available habitat in surrounding area. Likely short term frequent slight significant negative effect. • Snipe (all seasons). Regularly recorded using habitats in the site (farmland grassland), including displaying, roosting and feeding. Few studies on disturbance on snipe. Assume a temporary disturbance during construction. Farmland not a scarce resource locally, abundance of available habitat in surrounding area, small footprint of development. Likely short term frequent slight significant negative effect. • Buzzard (all seasons). Evidence suggests disturbance of buzzard up to 450m from large scale works. Assume a temporary disturbance during construction. Buzzard is a wide ranging generalist. Farmland not a scarce resource locally, abundance of available habitat in surrounding area, small footprint of development. Likely short term frequent slight significant negative effect. • Sparrowhawk (all seasons). No literature on the disturbance distance from sparrowhawk from construction work. Assume a temporary disturbance during construction. Farmland not a scarce resource locally, abundance of available habitat in surrounding area, small footprint of development. Likely short term frequent slight significant negative effect.
Turbine Delivery	• Habitat loss. Minor accommodation works at the M7 junction with the N62 (temporary stoning up of verges) and at site entrance. All works minor, temporary and mostly contained within the road carriageway. Once abnormal loads delivered, areas will be reseeded. Likely long term imperceptible negative effect on all KORs. • Disturbance. Existing habitats in areas of accommodation works do not have potential to support other species of conservation interest. On a precautionary basis it is assumed that some temporary disturbance may occur during works. Similar habitat for KORs in the wider area and the minor nature of works, likely long term imperceptible negative effect for all KORs.
Grid Connection	• To comprise underground cable route in road corridor and agricultural land. No significant effects predicted, given low potential to support bird species of conservation interest and/or extent of similar habitat in wider area. On a precautionary basis some temporary disturbance assumed during construction, with likely short term slight negative effect.

Operation	Direct Habitat loss. • Hen Harrier, Kingfisher, Golden plover, Merlin, Peregrine falcon, Little egret, Whooper swan, Kestrel, Lapwing, Snipe, Buzzard, Sparrowhawk. No effect (no additional habitat loss). Displacement & barrier effect. • Hen Harrier. Research indicates significant avoidance of turbines at 250m, reduced flight activity within 500m of turbines. Low number of Hen Harrier records within 500m of turbines. No dependency on site for roosting or hunting. Presence of alternative habitat. Long term, constant, slight negative effect. • Kingfisher. No literature available describing if wind farms have displacement or barrier effects. Not dependent on site for immediate surrounds for hunting or breeding. No significant displacement or barrier effects. Likely long term constant slight negative effect. • Golden Plover. Evidence of disturbance from wind farms at c.175m. In surveys, golden plover using farmland fields for foraging and roosting. Farmland not a scarce resource locally. Likely long-term constant, slight negative effect. • Merlin. Areas of hunting habitat will remain, footprint of development is small, farmland not a scarce resource. Likely long term constant negative effect. • Peregrine falcon. Birds frequently recorded hunting and flying within the site. No breeding territory within 2km of survey area. Research indicates species can be disturbed up to 750m from humans. Areas of hunting habitat will remain, footprint of development is small. Likely long term constant slight negative effect. • Little egret. Few studies on effects of disturbance. Species not dependent on site or surroundings for roosting, foraging or breeding. Likely long term constant slight negative effect. • Whooper swan. Low occurrence of species within 500m of turbines. Likely long term constant slight negative effect. • Kestrel. Species recorded hunting and flying within 500m of turbines, mostly within farmland. Fledglings and possible breeding pair recorded within the site. Nearest breeding territory 3km from nearest turbine. Studies show low levels of turbine avoidance. Kestrel not likely to be dependent on site (wide ranging and generalist nature), farmland not scarce. Likely long term constant slight negative effect. • Lapwing. Lapwing disturbance from wind farms is an average minimum distance of 108m (breeding season) and 260m (winter season). Research indicates no significant negative affect on breeding populations. Nearest turbine is 650m from breeding territory and potential for displacement/barrier effect. Farmland not a scarce resource, abundance of habitat in surrounding area. Likely long term constant slight negative effect. • Snipe. Few studies on the effects of disturbance on snipe in wind farms. Farmland not a scarce resource locally, extensive areas

	remain, footprint accounts for small proportion of site. Likely long term constant slight negative effect. • Buzzards. Research indicates that breeding buzzards avoided turbines at a distance of at least 500m. Wide ranging generalist, farmland is not a scarce resource, abundance of available habitat in surrounding area. Likely long-term constant not significant negative effect. • Sparrowhawk. No literature on the disturbance distance for sparrowhawk from wind farms. However, species is a wide-ranging generalist, farmland is not a scarce resource, abundance of available habitat in surrounding area. Likely long-term constant not significant negative effect. Collision risk. • Hen Harrier and Kingfisher. No record of flying within Potential Collision Height (PCH). Collision related mortality not likely to be significant for species. No effect. • Golden Plover. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'high'. Likely long term constant moderate negative effect (high magnitude, medium sensitivity). • Merlin. Species recorded in PCH. Collision risk (Appendix 7-6) calculated to be negligible. Likely long-term constant not significant negative effect. • Peregrine falcon. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'low'. Species likely to be attracted to the presence of prey species, lapwing and golden plover at the site. Bird Mitigation Plan for these species may result in a reduction at the site, with reduced flight activity for Peregrine falcon. Likely long term constant slight negative effect. • Little egret. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'low'. Likely long term constant slight negative effect. • Whooper swan. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'negligible'. Likely long term constant slight negative effect. • Kestrel. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'low'. Likely long term constant slight negative effect. • Lapwing. Species recorded in PCH. Collision risk identified as 'medium' (breeding) and 'high' (wintering) (Appendix 7-6). Breeding - likely long term constant slight negative effect. Wintering – likely long term constant moderate negative effect (high impact, medium sensitivity). • Snipe. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'low'. Likely long term constant slight negative effect. • Buzzard. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'low'. Likely long term constant slight negative effect (high impact, low sensitivity of species).

	• Sparrowhawk. Species recorded in PCH. Collision risk (Appendix 7-6) identified as 'negligible'. Likely long term constant not significant negative effect.
Grid Connection	• Grid connection route in existing road corridor to revert to existing condition. A hardcore track and two end masts breaking the existing OHL will be within agricultural fields. Given minor alterations to the existing environment and the low ecological value of this habitat, significant effects of displacement in relation to KORs are not predicted. Effect for all KORs is likely long term imperceptible negative effect.
Decommissioning	• Habitat loss. No direct or indirect effects of habitat loss. • Disturbance. As per construction.
Cumulative	• Carried out as per NatureScot guidelines on assessing cumulative impacts of onshore wind energy development. Considered plans and projects occurring in the area of the site (section 7.9.1), this includes proposed projects within 25km of the development site (given the foraging range of KORs). Potential significant effects are not anticipated for the majority of development (one off houses and agricultural related structures) and forestry works which would be subject to relevant licencing and guidance from the Forestry Service. Other wind farm development is summarised in Table 7-12. Significant cumulative effects are discounted with other wind farms due to the distance of wind farms from the proposed development, location of the wind farm, habitats on site and absence of significant residual effects arising from the existing wind farm and subject development. • Table 7-13 presents an evaluation of cumulative effects for the KORs associated with the development site. No significant effects are predicted due to absence of significant effects at other wind farm sites, distance from development site and the low collision risk at the development site, with implementation of the Bird Mitigation Plan (e.g., no potential for significant additive effects).

Mitigation

10.17.74. The EIAR proposes mitigation measures to offset potential effects on ornithology for all phases of the development. These include design of the development to avoid significant effects on avian receptors (turbines located at least 650m from the breeding territory of lapwing, which is greater than the 108m disturbance distance to wind farms outlined in research), minimum hardstanding size and use of built infrastructure where possible to accommodate grid connection works. In addition, standard best practice measures to minimise effects on birds are included within the proposed Construction Environmental Management Plan e.g., works to commence outside of the bird nesting season, no works to be undertaken

within species specific disturbance buffer if winter roosting or breeding birds of high conservation concern identified during works, environmental CoW to organise pre-construction walkover etc.

10.17.75. During operation, a Bird Mitigation Plan is proposed (Appendix 7-7) to mitigate potential effects on golden plover and lapwing (flight activity within 500m of turbines), by the removal of attractive foraging and roosting features and therefore flight activity in the vicinity of operating turbines. This will be achieved by control of sward heights, tethered bird control kites in the areas favoured by these species (nine fields, which the species were observed using Figure 7-1, Appendix 7-7).

10.17.76. Monitoring and evaluation of the Bird Mitigation Plan will be carried out in conjunction with the proposed Bird Monitoring Programme (Appendix 7-8). The objective of the Bird Monitoring Programme is to monitor the bird population within the study area during each development phase. It includes pre-commencement confirmatory surveys, species specific buffers if roosts/nests are found to be active prior to/during works, prescribed monitoring during the operational life of the wind farm as per SNH Guidelines (2009) occurring in years 1, 2, 3, 5, 10 and 15 (vantage point, winter walkover, breeding lapwing, collision monitoring and carcass removal trials[3]). Frequency of monitoring will be increased in accordance with the Bird Mitigation Plan during the first 5 no. years of operation (e.g., monthly during the breeding season and twice monthly during the winter). The Bird Monitoring Programme will be reported on annual to the planning authority and the NPWS. If lapwing or golden plover carcasses are found during surveys, the significance of effect on the county populations will be evaluated and any necessary recommendations made.

Residual Effects

10.17.77. With the implementation of proposed mitigation measures, no significant residual effects on KORs are predicted (direct, indirect, or cumulative effects).

10.17.78. **The Assessment: Direct and Indirect Effects**

10.17.79. I have examined, analysed, and evaluated Chapter 7 of the EIAR, all of the Appendices to the Chapter, including the Collision Risk Assessment. I am satisfied

[3]To enable a correction factor to be applied to carcass surveys, section 2.2.2.4 of Bird Monitoring Programme.

that the applicant provided sufficient ornithological survey data to enable assessment of likely effects on the environment.

10.17.80. The proposed development is situated largely in agricultural land, with the key habitats comprising agricultural land, wetlands, watercourses, broadleaved woodland, treelines, and hedgerows. The site lies in a wider area where there is substantial similar habitat available. Likely significant effects of the development arise from the loss of habitats (for foraging, roosting and to a lesser extent breeding), disturbance during construction and operation and collision risk. Given the relatively modest footprint of the development, short duration of construction works and substantial presence of similar habitat in the wider area of the site, and with adherence to best practice and site-specific mitigation measures (all phases), set out in the application documentation and referred to above, I am satisfied that the proposed development will not result in significant direct, indirect, or cumulative effects during construction, operation, or decommissioning. Further, measures are included in the development that have the potential to further enhance biodiversity of the site, including for bird species, for instance with the management of spoil replacement areas, hedgerow and woodland planting and restoration of Eastwood River.

10.17.81. With regard to collision risk, I note that the risk of collision is significant ('medium') for Golden Plover and Lapwing (see Appendix 7-6). As indicated in the Bird Mitigation Plan, in the absence of mitigation, mortality rates of the species, at a county level, could increase significantly because of the development (45% for lapwing and 36% for golden plover).

10.17.82. In view of this risk, the Bird Mitigation Plan puts forward measures to reduce this risk to 'low' by reducing flight activity of the two species in the vicinity of operating turbines, with the species observed in improved or wet grassland and very occasionally arable fields. Further, the Plan refers to research which provide evidence that the bird species tend avoid bare till, sheep pasture and high swards (see section 1.1, Appendix 7-6). The Plan therefore proposes the following mitigation measures for nine fields that are used by a significant number of birds and with landowner agreement (section 2.2, Appendix 7-6):

- Establishment and maintenance of sward height (prior to arrive of wintering lapwing and golden plover).
- Bird control kites (imitations of raptors).
- Application of measures or the period 1st October and 31st March each year, to coincide with wintering periods, when recordings on site were greatest.
- Oversight by appropriate specialist.
- Monitoring and evaluation.

10.17.83. The Bird Mitigation Plan refers to research on the efficacy of the proposed measures, with different studies essentially demonstrating the repellent effects of long grass and hawk-kites (section 3.1, Appendix 7-6). The research cited typically refers to the control of birds at airfields, however, it is not unreasonable to assume that the same techniques would be effective in the subject location. The Bird Mitigation Plan also proposes detailed monitoring and evaluation by a suitably qualified specialist, with a suite of bird surveys and collision monitoring carcass searches to be carried out during operation (Appendix 7-7, Bird Monitoring Programme) and an annual report on the effectiveness of the Bird Mitigation Plan (and additional recommendations if necessary) to be submitted, to be available on request to the PA and NPWS. Having regard to the foregoing, I am satisfied that subject to (a) the strict implementation of mitigation measures, (b) transparency in reporting of effects, and (c) implementation of additional measures in the event of adverse effects (as indicated in the EIAR), significant adverse direct, indirect, and cumulative effects arising from the operation of the proposed wind farm on birds can be avoided.

10.17.84. With regard to the specific issues raised in submission, for the reasons stated above, I am satisfied that the subject development will not adversely impact on the diverse and varied wildlife that the site supports, including barn owls, kestrels, sparrow hawk and buzzards. Further, the applicant has indicated that works will commence outside of the breeding season and that if works are required to run into the subsequent breeding season, pre-construction surveys will be carried out, with no works undertaken within species specific disturbance buffers for birds of high conservation concern (which would include Hen Harrier), until it is demonstrated that the roost/nest is no longer occupied.

10.17.85. **Conclusion**

10.17.86. Having regard to the examination of environmental information in respect of biodiversity, in particular the EIAR and the technical appendices to the report, it is considered that the main significant direct and indirect effects of the development on ornithology are the potential for loss of habitat, disturbance, and risk of collision during operation. Further, it is considered that these impacts will be mitigated by the application of best practice construction methodologies, as set out in the project documentation, and application of the proposed bird mitigation plan, with appropriate reporting and monitoring to demonstrate efficacy of measures.

10.17.87. **Land, Soil, Water, Air and Climate**

Land and Soil

10.17.88. **Issues Raised**

10.17.89. No issues are raised by parties to the application in respect of land and soil.

10.17.90. **Examination, analysis and evaluation**

Context

10.17.91. Chapter 8 of the EIAR assesses the likely effects of the proposed development on land, soil and geology. Associated appendices are Trial Pit Geological Logs (A8.1), Borehole Logs (A8.2) and PSD Analysis Reports (A8.3).

10.17.92. The assessment methodology includes desk study, consultation (scoping) with relevant statutory and non-statutory bodies, walkover survey and site investigations (soil probes, trial pitting, investigation boreholes, soil sampling and logging of subsoil exposures). No limitations are identified in the EIAR in the scope, scale, or context of the assessment.

Baseline

10.17.93. The proposed wind farm site is overlain by a mix of poorly drained mineral soils, areas of cut peat and an area of deep well drained mineral soils to the very north of the site (Figure 8-1). Subsoils are a mix of tills derived from limestones (predominantly), with areas of cutover peat towards the centre of the site, southeast and southwest (Figure 8-2). Six of the proposed turbines (T1, T2, T5, T6, T8 and T9), most of the access roads, temporary construction compound and borrow pit are in areas of limestone tills. Three of the turbines (T3, T4 and T7) and biodiversity enhancement area are in areas mapped as cut peat. The proposed grid connection underground cabling route, end masts and proposed 110kV substation are similarly overlain largely by poorly drained mineral soils and subsoils are mapped as limestone tills. Bedrock geology is limestone. Depth to bedrock ranges from 0.2m to c.9m (Table 8-4). Overburden depths were greatest nearer to the river Suir (BH02, T2 and BH03 at T8). Groundwater inflows were identified at T1 (TP01), T2 (TP04 and BH2), T3 (TP07) and T4 (TP08). At BH1 (location of temporary borrow pit), the light grey limestone was highly weathered at the top of the rock, becoming very strong and then below 5mbgl clay filled fractures were present, indicating a

lithology consistent with karstified limestone. Due to forestry and lack of access at T9, hand soil augering only was possible. The trial pit in the location of the proposed substation was carried out c.100m to the east of the substation due access issues (silage). Geological heritage sites near the site (Figure 8.5), include c. 6.2km to the west of the site is a mountain top plateau with near vertical cliffs called Devilsbit, a Geological Heritage Site (TY026), '*An excellent exposure into alluvial fan conglomerates and associated early Devonian sandstones'*. Desk and site survey found no evidence of soil contamination and the GSI Landslide data shows no record of any historic landslides in the vicinity of the site or surrounding lands and a low probability of a landslide (localised and shallow nature of peat, flat topography).

Potential Effects

10.17.94. Likely significant effects of the proposed development, as predicted in the EIAR, in advance of any mitigation measures, are summarised in Table LS1 below. The assessment of potential effects has regard to the characteristics of the site and the need to excavate soils to suitable depths e.g. to suitable bearing material. With the presence of deep alluvium deposits at T1, T2, T3 and T8 piled foundations may be required. Estimated spoil excavation volumes are shown in Table 8-6 and 8-7 and comprise 121,600m^3 of material to be managed from the wind farm site and 18,810m^3 from the proposed grid connection (underground cable and substation). This material will be placed within the borrow pit and dedicated spoil placement areas within the site near T01, T02, T05 and T06. Some material from the grid connection infrastructure going to an appropriate licenced facility if necessary. Material for the construction works will be provided by the onsite borrow pit (70,000m^3) and from licenced quarries (20,000m^3). The ground level of the borrow pit will be reduced from a maximum level of 118.5m^3 to 112.5m^3.

Table LS1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• Land uses and land drainage likely to continue. • Lost opportunity to capture valuable renewable energy resource and to restore a segment of the Eastwood River.
Construction	Land and Land use.

	• Wind farm. Loss of commercial forestry (4.22ha) and permanent loss of agricultural land (7.3ha). Negative, moderate, direct, likely, long-term effect on land and land use. • Substation and grid connection. Permanent loss of agricultural land (1.2ha, substation, 1.7ha grid connection), temporary loss of 2,530m^2 of agricultural land (construction compound). Negative, slight, direct, likely, long-term effect on land and land use. Soil and subsoil excavation. • Wind farm. Excavation of mineral soil/sub-soil and bedrock for installation of foundations, hardstands, etc. Minor excavations at turbine delivery route/site entrance. With temporary disturbance or permanent removal at various locations. Negative, moderate, direct, likely, permanent effect on soil, subsoil, and bedrock (relocation within the site). • Substation and grid connection. Excavation of mineral soil/sub-soil and bedrock. Negative, slight, direct, likely, permanent effect on soil, sub-soil and bedrock. Contamination of Soil. • Wind farm and grid connection. Potential for accidental contamination of soil during construction with hydrocarbons etc. Negative, direct, short term, likely* effect on soil, subsoils and bedrock. *NB the EIAR refers to unlikely effect. Taking a precautionary approach, risk in advance of mitigation is likely not unlikely. Erosion of exposed soils and subsoils. • Wind farm and grid connection. Risk of erosion of soils and contamination of downstream waterbodies (increase in siltation). Negative, imperceptible to slight, direct, permanent, likely effect on soil and subsoils by erosion and wind action at site.
Operation	• Wind farm and grid connection. Risk of accidental leaks/spills from maintenance of turbines (vehicles, plant, transformers). Indirect effects with use of small amounts of granular fill to maintain access tracks, sourced from local quarries. No potential for significant effects.
Decommissioning	• Wind farm. Similar to construction but reduced in magnitude. Some of the potential effects of construction can be reversed e.g. rehabilitation of construction areas. • Substation. Will not be decommissioned.
Cumulative	• Construction. Construction works will be confined to the immediate area of the site. Potential for cumulative effects due to potential removal and transport of material to a licenced facility where required. However, effects of same will have been assessed in the licencing of the facility. • Operation. No alteration of land, soils, and geology. No potential for cumulative effects.

	• Decommissioning. Minimal disturbance of land proposed. Underground cables to be left in situ, turbine foundations to be covered with soil/sub soil etc. No potential for cumulative effects.

Mitigation

10.17.95. The EIAR proposes mitigation measures to offset potential effects on land, soil and geology for all phases of the development. These include standards good practices during construction, for example, in respect of soil handling, soil storage, site drainage systems to limit runoff impacts, use of brash mats in wet areas (e.g. T09)/all off road routes (if required), as set out in the proposed CEMP. During operation, transformers will be situated on a bunded concrete plinth and turbine transformers will be located within the turbines (confining leaks to the turbine). Any aggregate will be supplied from authorised quarries.

Residual Effects

10.17.96. With the implementation of proposed mitigation measures, no significant residual effects on land, land use, soils or geology are predicted. This is largely due to the small footprint of the development, reuse of soils/material within the site, negligible loss of agricultural land and forestry and proven, effective mitigation measures to mitigate the risk of soil contamination and proposed decommissioning plan (Appendix 4-4).

10.17.97. **The Assessment: Direct and Indirect Effects/Conclusion**

10.17.98. I have examined, analysed, and evaluated Chapter 8 of the EIAR and the associated appendices. I am satisfied that the applicant provided sufficient survey data to enable assessment of likely effects on the environment. Having regard to the detailed assessment carried out, the location of the development in an area which is at low risk of peat failure, the modest footprint of the development, and subject to the detailed and full implementation of proposed mitigation measures, I am satisfied that subject development will not give rise to significant direct, indirect, or cumulative effects on land, soils, or geology of the site.

Water

10.17.100. **Issues Raised**

10.17.101. Third parties raise concerns regarding the issue of historic flooding on adjoining lands and the increased risk of flooding arising from the development.

10.17.102. **Examination, analysis and evaluation**

Context

10.17.103. Chapter 9 of the EIAR deals with hydrology and hydrogeology. Associated appendices are Flood Risk Assessment (A9.1), Laboratory Reports (A9.2), WFD Assessment (A9.3), Drainage plan for wind farm (A4.1a), Harvest Management Plan (forestry) (A.2), CEMP (A4.3) and Drainage plan for grid connection (A4.5).

10.17.104. The EIAR identifies the potential zone of impact of the proposed development, the 'Water Study area', (including for cumulative effects) as the WFD sub-catchments within which the site is located (Suir_SC_010) and those immediately upstream and downstream (Fishmoyne_SC-010, Suir_SC_020 and Suir_SC_04) (Figure 9-1). The assessment of effects has regard to desk study, hydrological walkover surveys, detailed drainage mapping, soil probes/investigations, trial pitting, 3 no. boreholes, continuous groundwater level monitoring (*in situ* data loggers at the three no. boreholes), field hydrochemistry measurements and surface water flow measurements and surface water sampling. No limitations or difficulties were encountered during the assessment, and I can see no evidence to the contrary.

Baseline.

10.17.105. The development site is low lying, with flat to gently undulating ground and soils which are poorly draining. Regional and local hydrology (Figures 9-1 and 9-2) comprise the following:

- The site lies in the Suir WFD catchment, hydrometric area 16 (not 15 as stated in the EIAR) and within the Suir_010 sub-catchment, a headwater sub-catchment for the River Suir. The River Suir eventually discharges into the Upper Suir Estuary, just west of Carrick on Suir, c.56.8km southeast of the site (direct line).

- Locally the site falls within two WFD river sub-basins the Suir_020 and the Eastwood_010 sub-basins (Figure 9-2).
- Within the Suir_020 river sub-basin, the River Suir enters the site from the north and continues within the eastern part of the site. The Shanakill Stream enters the site from the northeast. Within the Eastwood_010 sub-basin, the Eastwood River flows easterly, and enters the site from the west (Figure 9-2). The Eastwood River joins the River Suir c.500m downstream of the site.
- The underground grid connection runs from the Suir_020 river sub-basin to the east, falling within the Clonmore Stream (Suir)_010 river sub-basin. Clonmore Stream flows into the Suir within the development site (Figure 9-2).
- The site is extensively drained by a network of natural watercourses (streams and rivers) and manmade land drainage networks. All watercourses and manmade drainage features ultimately drain into the River Suir.
- Minor temporary accommodating works at junction 22 of the M7, to facilitate turbine delivery, are within the Nore catchment. The temporary abnormal load entrance to the site is within the Suir River catchment.

10.17.106. Reported in the EIAR, surface water body status for the period WFD 2016 to 2021 is Suir_020 (Poor, At risk), Eastwood_010 (Moderate, under review), Clonmore Stream (Suir)_010 (Moderate, At risk), Suir_030 (Moderate, At risk).

10.17.107. Surface water flow monitoring and sampling locations are shown in Figure 9-3 (Site Drainage Map). Laboratory analysis of surface water sampling indicate some instances of elevated levels including for suspended solids (SW1), ammonia (multiple), and BOD (multiple) (Tables 9-10 and 9-11).

10.17.108. The proposed development site lies within the Templemore Groundwater Body (Good status, WFD 2016-2021), comprising a Locally Important Aquifer. Based on depth of overburden encountered, the EIAR indicates a vulnerability rating of ‘Extreme’ (including locations of T4, T5, T6 and T7) to ‘High’ (including locations of T1, T2, T3, and T8) with no areas of ‘Moderate’ (see Table 9-14). (T9 subsoil depths not confirmed).

10.17.109. Groundwater flow is to the south with discharge to the River Suir and its tributaries, via springs or baseflow direct to rivers. Most movement of water takes

place in the upper weathered zoned of the rock. The EIAR refers to trial pitting and investigation boreholes (see Water section). Of note it states that deeper alluvial deposits at turbines T1, T2, T3 and T8 are groundwater saturated, where moderate to large groundwater inflows were recorded at depth c.2m below ground level during trial pitting. Very minor groundwater inflows were recorded at T4 at c.2.1m below ground level. The only surface water seepages were noted from the limestone tills at T6 and T7. Trial pit at T5 was dry.

10.17.110. Boreholes indicated large groundwater inflows at BH1 between 7.5m and 9mbgl. Bedrock encountered in BH2 and BH3 was very strong with rare to no occasional fractures with no major groundwater inflows. Continuous groundwater level monitoring was carried out at BH1 and BH2 for 3+ months (July to November) in the location of T02 and the proposed borrow pit (Table 9-13). Manual groundwater level measurements were taken over the same period (Table 9-12).

10.17.111. Designated sites which are hydrologically connected to the proposed development site are indicated in Table 9-15 and comprise the Lower River Suir SAC and River Barrow and River Nore SAC (both via surface and ground water connectivity). Impacts on these European sites is considered in the AA section of this report.

10.17.112. Nearest public water supply and group water schemes are shown in Figure 9-10, along with GSI mapped wells in the area of the site. Given the direction of groundwater flow and likely groundwater flowpaths within the upper weathered zone, potential effects on local groundwater supplies and water supplies wells have been ruled out. Having regard to the data available on file, and GSI characterisation of the Templemore Groundwater Body, this conclusion is not unreasonable. Nearest surface water drinking supplies are c60km downstream.

10.17.113. Sensitive receptors are identified as groundwater bodies/aquifers and surface water bodies (with connection to downstream European sites).

Potential Effects

10.17.114. Likely significant effects of the proposed development, in advance of any mitigation measures, are summarised in Table HH1 below. The assessment of potential effects has regard to the construction of physical infrastructure outside of 50m from waterbodies (Figure 9-11), except for clearspan and/or HDD crossings

across the Eastwood River, Suir River and Clonmure stream (wind farm and grid connection) and provision of no. 16 new crossings over field boundary drains within the site. It also has regard to the designed in proposed drainage management system, which is based on two principles, keeping clean water clean (e.g. directing upstream flows away from works areas) and directing drainage waters from any works areas into appropriate silt traps, settlement ponds etc. with controlled release (Figure 9-12, Appendix 4-1a and Appendix 4-5). There are no direct discharges to surface waters or existing drains.

10.17.115. Also considered is the applicant's Flood Risk Assessment (Appendix 9-1, EIAR). In essence, the flood risk assessment identifies the risk of flooding on the site (National Indicative Fluvial Mapping, NIFM) for the present-day scenario (Figure 9-5), for the 100 year and 1000 year flood risks. Consequently, a site-specific flood risk assessment, that includes an allowance for climate change, is provided in Appendix 9-1. It provides a site-specific flood risk assessment for the existing greenfield site and development site. For the greenfield scenario (Figure 9-6) it maps:

- Proposed turbines T4, T7, T8 and T9 inside the 100-year flood zone, with depth of turbine affected from 0.01m (T3) to 1.25m (T7). NB section 9.3.6.2 refers to the location of T3 in 100 year flood zone, but this is not indicated in Figure 9-6.
- Proposed turbines T3, T4, T7, T8 and T9 within 1000-year flood depth at affected turbine locations from 0.07m (T3) to 1.42m (T7).
- Sections of the proposed access road linking T5, T6, T7, T8 and T9 within the 100 year and 1000-year flood zone.
- All other infrastructure (including 110 kV substation, borrow pit, spoil management areas) outside of the 100-year and 1000-year flood zones.

10.17.116. A summary of the results for the developed scenario are summarised in Table HH1 below.

Table HH1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects

Do Nothing	• Current land use patterns likely to continue. Forestry likely to be felled and replanted. Land drainage in the area of the site likely to continue/may be extended. • Opportunity to capture renewable energy resource and to restore a section of the Eastwood River would be lost.
Construction	• Clear felling (forestry, woodland, linear vegetation) and earthworks (including at watercourse crossings). Increased suspended solids in surface water runoff and nutrient release. Indirect, negative, moderate to significant, temporary, and likely effect. • Groundwater levels (during excavation works). Potential dewatering of the borrow pit (as required) and other deep excavations (i.e. turbine bases) have potential to impact on local groundwater levels and flows. Direct, slight, brief, likely effect on groundwater levels and flows. • Excavation pumping/drainage (impacts on surface water). Some minor shallow groundwater/surface water seepages are anticipated at excavations which will create additional volume to be treated by runoff management system. No contaminated land so no pollution arising from same. Indirect, negative, significant, temporary, likely impact on surface water quality. • Potential release of hydrocarbons. Accidental spillages during refuelling of construction plant with petroleum hydrocarbons and risk to groundwater, surface water, associated ecosystems, and terrestrial ecology. Indirect, negative, moderate, short term, likely impact to local groundwater quality and indirect, negative, significant, short term likely impact to surface water quality. • Groundwater and surface water contamination (wastewater disposal). Release of effluent from on-site temporary wastewater treatment systems, with potential impact on groundwater, surface water, water quality, fish stocks and aquatic habitats. Negative, significant, indirect, temporary, unlikely effect to surface water quality. Negative, slight, indirect, temporary, and unlikely effect to local groundwater. • Release of cement-based products. Potential for negative effects on water quality (alkaline pH), with adverse effects on water quality, fish stocks. Indirect, negative, moderate, short term, likely effect to surface waters. • Morphological changes to surface water and drainage patterns. Diversion, HDD, culverting, and bridge crossing of surface watercourses can result in morphological changes to watercourses, changes to drainage patterns and alteration of aquatic habitats. Construction of structures over watercourses has potential to significantly interfere with water quality and flows during construction. Access road construction in the flood zone can result in alterations to drainage patterns. Negative, direct, slight, long term, likely effects. • Effects on hydrologically connected sites. All designated sites are >20km downstream (Cabragh Wetlands pNHA, Lower River Suir SAC and River Barrow River Nore SAC). Taking a precautionary approach, potential for significant effects on Lower River Suir SAC and Cabragh Wetlands pNHA. Indirect, negative, imperceptible, short term, likely effect. NB potential for water quality effects on Cabragh

	Wetlands excluded for reasons stated in biodiversity section of this report. • Site entrance and turbine delivery. Minor works, potential for suspended solids in surface water flowpaths with downstream effects. Indirect, negative, slight, short term, likely effect. • Use of siltbusters and impacts on water quality. Used to remove suspended solids on construction sites by means of chemical dosing and settlement (efficacy indicated in Figure 9-13). Potential for overdosing with chemical agents and risk of chemical carryover in post treatment water, with negative impacts on downstream water quality. Negative, slight, indirect, temporary, likely effect. • Impacts on surface water and groundwater WFD status. Potential for deleterious effects on Templemore GWB (Good status), Suir_020 surface water body (Poor status) and Eastwood_010 and Clonmore Stream_010 (Moderate status) arising from construction works, sedimentation, pollutants, changes to drainage and hydromorphology etc. Indirect, negative, imperceptible, short term, likely on surface and ground water bodies. • Hydrogeological effects associated with piled foundations (up to 20 no. 900 mm cylindrical bored piles at T1, T2, T3 and T8 and possibly T9, to a depth of 5-18m bgl). Potential effects on groundwater flows i.e. creation of preferential flowpaths through lower permeably subsurface layers or creation of blockage to local or regional groundwater flow within aquifer due to placement of pile clusters. Negative, moderate, direct, short, term, likely effect on groundwater quality/hydrochemistry and flowpaths. • River channel restoration (effects on water quality, morphological and hydrological effects). Potential for negative effects during construction with increase in suspended solids with excavation works for channel realignment. Negative, moderate, direct, short term, likely effect on surface water quality.
Operation	• Replacement of natural surface with lower permeability surfaces. Potential for increase in surface water runoff to watercourses and increased risk of downstream flooding. Negative, slight, indirect, permanent, moderate probability of effect on all downstream surface water bodies. Predicted increase in surface water runoff is 2,808m^3/month or an increase of 0.7% of average monthly volume of runoff from baseline conditions. The additional volume is low as runoff from the site is relatively high (65%) and effects are conservative as in practice access tracks will be permeable. Prior to mitigation increase in runoff is predicted to be imperceptible. • Suspended solids in surface waters. Some potential for increase in silt laden runoff from minor maintenance of site e.g. maintenance of entrances, internal roads/hardstands. Negative, slight, indirect, temporary, likely. • Stage 3 flood risk assessment (A9.1) maps turbine T3, T4, T8 and T9, sections of the proposed access roads linking T5, T6, T7, T8 and T9 inside the 100 and 1000 year flood zones, with potential to increase flood risk due to floodplain storage reduction and alteration of drainage patterns, with negative, direct effect on project

	infrastructure (moderate) and property and people, imperceptible as the flood model for the developed scenario, Appendix 9-1, predicts no significant change in flood levels on site, upstream or downstream or flow velocity. Grid connection end masts and section of grid itself are also within the same zones, but no adverse effects due to underground nature/structure of end masts. • Effects of WFD objectives. No direct discharge to downstream receiving waterbodies or to groundwater (Appendix 9-3).
Decommissioning	• Similar to construction but reduced in magnitude. Some of the potential effects of development will be reduced e.g. rehabilitating constructed areas with vegetation reducing runoff and sedimentation. Roadways to be kept and maintained (agricultural/forestry use). Electrical cabling to be removed, ducting to remain. Turbines to be dismantled, turbine and mast foundations to remain in situ. Substation to remain. Informed flexibility in respect of decommissioning to remain. No significant effects on hydrological and hydrogeological environment predicted.
Cumulative	• Groundwater. Cumulative effects unlikely given hydrological setting where groundwater flow is towards the River Suir that flows through the site and the near surface nature of construction activities i.e. effects on groundwater will not extend beyond the site. • Surface water. Potential for effects greatest at construction stage. Cumulative effects limited to sub-catchments in which the development is situated, Suir_010, Fishmoyne_SC_010, Suirc_SC_020 and Suir_SC_040 (excluding minor TDR accommodations works in River Nore catchment). o Agriculture. Potential additive effect with existing pressures from agriculture in the catchment e.g. movement of soil, addition of fertilizers and pesticides, nutrient losses, and suspended solids runoff. o Commercial forestry. Potential additive effect with existing pressures from forestry in the catchment e.g. sediments and nutrient release to aquatic environment and impacts from acidification. Most forestry at distance from the site. o One off housing. No potential for significant cumulative effects with small number of applications for new dwellings/farm buildings, scale of work involved, proximity to development site and temporal period of likely works. o Wind farms. Three wind farms in study area, Lisheen WF I, II and III, Bruckana WF all operational. No potential for in combination construction effects. Total area of the cumulative study area is c.570km^2 equating to 1 no. turbine per 10.2km^2 (47 existing turbines in study area). EIARs for operational wind farms propose best practice measures for operation to ensure no downstream effects.

<u>Mitigation</u>

10.17.117. The EIAR proposes mitigation measures to offset potential effects on the water environment for all phases of the development. These include designed in measures (avoidance of watercourses), adherence to adherence to best practice construction methods (including surface water management and forest Harvest Management Plan, Appendix 4-2), with all measures incorporated in the CEMP (Appendix 4-3).

10.17.118. Mitigation measures in respect of flood risk are discussed in the assessment below. Regarding potential impacts on groundwater levels, the EIAR refers to groundwater monitoring in the location of the borrow pit which indicates groundwater flows typically below final extraction depth/floor level of borrow pit (brief spikes after heavy rainfall events), with temporary effect but not triggering any requirement to dewater (Figure 9-7). It is also stated that the edge of proposed borrow pit (surrounding ground level) is 0.7m above base of borrow pit, with no potential for groundwater to escape. To avoid excavation and dewatering of alluvial deposits at T1, T2, T3 and T8, piled foundations are proposed. Ground conditions at T9 to be determined at detailed design phase, with potential for piled foundations also.

10.17.119. Mitigation measures to address potential hydrogeological effects of piled foundations include detailed construction methodology to prevent a long-term pathway between upper alluvial deposits and lower bedrock aquifer (vermiculite plug) and downward flow of pollutants during piling works (bentonite seal) (see section 9.5.2.12). The measures are consistent the guidelines provided by the Institute of Geologists of Ireland and EPA for drilling wells for water supply. The impact of the pilling array is considered to be imperceptible on regional groundwater flow given the modest piling footprint per turbine (c.12.7m^2/turbine) and separation distance between turbines. Overall effects of piling on the regional water supply and Templemore GWG, are not predicted to occur (including on WFD status).

Residual Effects

10.17.120. With the implementation of proposed mitigation measures, no significant residual effects on the water environment are predicted, including on WFD status of surface water or groundwater bodies (see Appendix 9-3) and flood risk (Appendix 9-1). This is based on the proven efficacy of mitigation measures to prevent adverse effects on the water environment, including water quality, groundwater levels,

drainage patterns and hydromorphology. With the absence of effects on the water environment, the EIAR predicts that there is no potential for significant effects on health from surface or groundwater contamination of public or private supplies or from any significant increase in flood risk.

10.17.121. **The Assessment: Direct and Indirect Effects**

10.17.122. I have examined, analysed, and evaluated Chapter 9 of the EIAR, all of the Appendices to the Chapter and the associated CEMP. I am satisfied that the applicant has provided sufficient survey data to enable assessment of likely effects on the water environment. Further, having regard to the detailed assessment carried out, the location of the development, absence of substantial concurrent development in the area of the site (sub-catchment) and the proposed mitigation measures, which are standard good practice measures and which are proven to be effective at preventing adverse effects on water flows, hydromorphology and water quality, I am satisfied that no significant, adverse direct, indirect, or cumulative effects on the water environment, water quality or WFD objectives will arise as a consequence of the development (see Appendix 9-3, EIAR).

10.17.123. In coming to this conclusion, I have had regard to the risk of flooding, as raised in submission. Notably, the applicant has identified that the site is at risk of flooding and has carried out a Flood Risk Assessment (Appendix 9-1). This clearly identifies that the site, located adjacent to the River Suir, in a zone for which has been affected by past flood events (fluvial) and where there is a high probability of future flooding (AEP of 10%). The development site is also situated in an area which has been the subject of OPW arterial drainage to improve land for agriculture (e.g. by lowering water levels via the deepening and widening of channels).

10.17.124. The assessment of likely effects of the development on flood risk includes modelling of the existing river system (as modified) and calculation of likely effects of infrastructure associated with the development with an allowance for climate change. Flood risk management measures include FFL/ground level for wind turbines T3, T4, T8 and T9 at a height of 500mm+ above 1000-year flood level (which includes an allowance for climate change), site roads at existing ground level and proposed bridges and culverts in compliance with OPW Section 50 Arterial Drainage Act 1945, as amended. Modelled comparison of flood risk, with and without the subject

development, indicate no significant impact on water levels for extreme flood events (1 in 100 years and 1 in 1000 years) or significant change in velocities. Calculations on existing and proposed surface water discharge from the site indicates a relatively low flow increase, with no impact on water levels in the river. However, additional SuDS measures are proposed to reduce predicted effects (i.e. loss of storage). Finally, there is no significant increase in extent of flood for either flood zone A or B (section 6.4.3) or therefore of increased flood risk on the site or elsewhere.

10.17.125. I note that the Flood Risk Assessment states that the additional attenuation ponds (SuDS measures) could tie in with silt management systems which would normally be employed during construction. I also note that settlement ponds are indicated in the proposed drainage layout. In the interest of completeness and robustness, I would recommend a condition that requires the applicant to identify provision of settlement ponds which will provide long term SuDS measures to address the loss of storage on the site associated with the development.

10.17.126. I also note that the Hydraulic Assessment Report in respect of the Eastwood River restoration project (Annex J of FRA) demonstrates that the works will have no impact on the downstream area and a slight improvement in flood levels and natural flow conditions locally.

10.17.127. **Conclusion**

10.17.128. Having regard to the examination of environmental information in respect of water, in particular the EIAR and the technical appendices to the report, it is considered that the main significant direct and indirect effects of the development on are the potential for contamination of ground and surface water during construction and operation, alterations to surface water flows/flowpaths, changes to hydromorphology (water crossings) and increased risk of flooding (on site and downstream). Further, it is considered that these impacts will be mitigated by the design of the proposed development, which includes measures to avoid impacts on water bodies (layout) and alterations to surface water flows (drainage design, FFLs), and by the proposed use of standard construction methodologies, which have been demonstrated to mitigate effects on hydromorphology and water quality.

Air and Climate

10.17.129. Chapters 10, 11 and 12 of the EIAR address air quality, climate and noise and vibration, respectively.

Air Quality

10.17.130. **Issues Raised**

10.17.131. Third parties raise concerns regarding effects on air quality during construction (dust, emissions and associated health effects).

10.17.132. **Examination, analysis and evaluation.**

Context

10.17.133. Chapter 10 of the EIAR deals with air quality. The methodology for the assessment of dust emissions has regard to Institute of Air Quality Management (UK) guidelines.

Baseline

10.17.134. The proposed development site lies in Zone D, rural Ireland, one of four air quality zones identified in Ireland by the EPA. Monitoring data for rural areas indicates generally good air quality (with some exceedances for PM_{10} EPA to arise mainly from the burning of solid fuel and a small number of exceedances for nitrogen dioxide). Sensitive properties in proximity to the wind farm and grid connection site are summarised below (information presented in development site section 10.2.2.3 of the EIAR, and I assume this to include construction roads etc.)

Distance	**No. of Sensitive properties within stated distance**
20m	1 (project footprint).
50m	8 (2 project footprint; 6 grid connection)
100m	10 (4 project footprint; 6 grid connection)
350m	28 (12 project footprint, 16 grid connection).

Potential Effects

10.17.135. Likely significant effects of the proposed development on air quality, as predicted in the EIAR, in advance of any mitigation measures, are summarised in Table AQ1 below.

Table AQ1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• Air quality likely to remain as is. • Opportunity to reduce emissions (carbon dioxide, oxides of nitrogen and sulphur dioxide) from the atmosphere and to capture part of the county's renewable energy resource is lost.
Construction	Exhaust emissions (from plant and vehicles, NO_2, benzene and PM_{10}). • Construction of wind farm and grid connection, with increase in vehicle/plant emissions. Short term, slight, negative impact on air quality. • Transport to and from the site (wind turbine components, materials, staff, waste) for construction of wind farm, grid connection and associated infrastructure. Short term increase in exhaust emissions. Dust. • Wind farm and grid connection. Increase in dust emissions from construction of infrastructure e.g. site clearance, foundations, movement of material on site from/to borrow pit, works to Eastwood River, felling. Short term, slight, negative impact on air quality (based on small number of receptors in the vicinity of the site and distance of works from receptors, Table 10-10). • Transport to and from the site (e.g. dust as HGV vehicles leave site). Increase in dust emissions with movement of materials and staff to and from the site. Short term, slight, negative impact on air quality (based on large number of HGVs and low sensitivity area, Table 10-11).
Operation	Exhaust and dust emissions. • Wind farm and grid connection. Small traffic movements associated with operation of wind farm (1-2 times per day). Similar vehicle movements for sub-station. Long term, imperceptible negative impact on air quality. Site will also continue to be used as a working farm. Carbon offsetting. • Emission savings in respect of carbon dioxide, oxides of nitrogen and sulphur dioxide. Long term significant positive effect on air quality with the offsetting of c.58,808 tonnes of carbon dioxide per annum (see Climate section).
Decommissioning	• Like construction phase, but with reduced effects. To be subject to Decommissioning Plan, Appendix 4-4, EIAR, to be agreed at the time with the PA.
Cumulative	• Construction/Decommissioning. No significant effects on air quality during construction phase, therefore, no potential for significant cumulative effects should other proposed or consented plans or projects within the surrounding landscape be constructed in parallel with the development. • Operational. No long term significant adverse effects on air quality during operation, long term moderate positive effects with reduction in carbon dioxide, oxides of nitrogen and sulphur dioxide and offsetting of

	c.58,808 tonnes/pa of CO_2. No measurable cumulative effects on air, therefore should other proposed or consented plans or projects within the surrounding landscape be constructed in parallel with the development.

Mitigation

10.17.136. Mitigation measures set out in the EIAR, and in the CEMP, include standard good practices to minimise vehicular and dust emissions during construction and operation, for example, appropriate maintenance and use of vehicle/plant maintenance and use, use of agreed haul routes, transport in covered loads, use of local quarries for materials, use of sporadic wetting of loose stone surfaces, minimal areas of excavation and stockpiling.

Residual Effects

10.17.137. With the implementation of mitigation measures, the EIAR predicts no significant residual adverse effects on air quality from exhaust or dust emissions during construction.

10.17.138. **The Assessment: Direct and indirect effects.**

10.17.139. I have examined, analysed, and evaluated Chapter 10 of the EIAR and the associated CEMP. I am satisfied that the applicant has provided sufficient data to enable assessment of likely effects on air quality. The site lies in a rural area and will introduce construction work to the largely agricultural landholding that forms the application site. Likely direct and indirect effects will arise from the increase in traffic, plant and equipment during construction, construction works (e.g. excavation and movement of rock/soils) and comprise an increase in associated vehicular emissions and dust on the public road/in the vicinity of the site.

10.17.140. Construction works are removed from nearest sensitive receptors, typically beyond the 50m, the distance within which most significant dust deposition occurs, and beyond 350m, the distance within which dust deposition impacts can occur. For example, with the borrow pit 250m from the nearest involved landowner and 300m from nearest non-involved landowners. However, the potential for greater adverse effects arises at the entrances to the site on the L-3248 and L-7309, which are located in proximity to residential dwellings, and which will experience a high level of construction related traffic. The applicant proposes standard good construction

practices to minimise adverse effects on air quality. With the application of these measures, I am satisfied that whilst short term adverse effects may arise during construction, particularly in the immediate area of the development site, these can be controlled to an acceptable level, and which would be typical of construction sites. There is little potential therefore for indirect health effects.

10.17.141. During operation, the development will have a long-term positive effect on air quality by reduced emissions associated with the use of fossil fuels and carbon offsetting. Cumulative effects on air quality are unlikely to arise during construction, given the absence of any significant construction works currently permitted or proposed in the immediate area of the site and with the application of the proposed mitigation measures. During operation, there is potential for positive cumulative effects on air quality with other wind farm development in the county and surrounding area.

10.17.142. **Conclusion**

10.17.143. Having regard to the examination of environmental information in respect of air quality, in particular the EIAR, and subject to the compliance with the mitigation measures set out in the EIAR and application documents, I am satisfied that whilst there will be short term effects on air quality and dust during construction, effects will not be significant. During operation the development will have a long-term positive effect on air quality by reduced emissions associated with the use of fossil fuels and carbon offsetting, with the potential for positive cumulative effects with other wind energy development in the county.

Climate

10.17.144. **Issues Raised**

10.17.145. No issues are raised by parties to the application in respect of climate.

10.17.146. **Examination, analysis and evaluation.**

Context

10.17.147. Chapter 11 of the EIAR deals with climate. Associated appendices are 11-1, Carbon Calculations.

10.17.148. Carbon losses and carbon savings from the development are calculated having regard to the Scottish Guidelines, calculating Carbon Savings from Wind Farms on Scottish Peatlands, Macauley Institute Carbon Calculator for Wind Farms and TII Carbon Assessment Tool (section 11.5.2). Origin of potential carbon losses include turbine life (manufacture, construction, and decommissioning), losses due to back up, reduced carbon fixing, forestry felling, embodied carbon in construction materials and carbon losses associated with traffic and transport movements. As most of the development site is underlain by till derived from limestone, including the location of turbines and associated infrastructure, the carbon balance model, which assumes acid bog is present, is conservative. It also excludes any positive effects associated with decommissioning e.g., revegetation of hardstands.

Baseline

10.17.149. The baseline environment for the subject development comprises a mix of pastoral agriculture, small-scale private forestry, and the public road corridor along the portion of the proposed underground grid connection route.

Potential Effects

10.17.150. Likely significant effects of the proposed development on climate, as predicted in the EIAR, in advance of any mitigation measures, are summarised in Table C1 below.

Table C1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects

Do Nothing	• Lost opportunity to significantly reduce greenhouse gas emissions. Lost opportunity to restore section of Eastwood River and natural wooded riparian habitat. Long term slight negative effect.
Construction	• Wind farm. Will require tree felling, construction materials (e.g. cement), operation of vehicles and plant, transport of workers, use of borrow pit, movement of soils, restoration of river habitat. Short term slight increase in greenhouse gas emissions. Some long term slight negative impacts (vegetation removal). • Grid connection. Will require limited vegetation removal, movement of soils, construction materials (e.g. cement), operation of vehicles and plant, transport of workers. Short term slight increase in greenhouse gas emissions. • Transport to the site. Of turbines and construction materials to the site. Short term and slight negative impact with increase in GHG emissions associated with transport. • Waste disposal. Construction waste (e.g. excavation, material surpluses, damaged materials, and packaging). Short term slight negative impact arising from GHG emission associated with generation and management of waste streams.
Operation	• Wind farm. Displacement of c.58,808 tonnes of carbon dioxide per annum from traditional carbon-based electricity generation, with long term significant positive effect on climate. Some potential long term imperceptible negative effects that may occur, with the release of carbon dioxide to the atmosphere, due to maintenance and monitoring. • Grid connection. Periodic site visits for monitoring and maintenance, with potential long term imperceptible negative effects. • Transport to site. In the event that a turbine blade is damaged, with potential long term imperceptible negative effects. • Waste disposal. Any waste generated during operation will be minimal and impacts would be short term and imperceptible.
Decommissioning	• Similar to construction but of less impact.
Cumulative	• Construction. Potential for cumulative effects, with concurrent construction of other permitted development in the area of the site, with short term cumulative increase in GHG emissions and permanent negative imperceptible impacts on climate. • Operation. GHGs emission during construction will be offset by the operation of the development, with no potential for adverse cumulative effects on climate from the development and other permitted or proposed projects or plans in the area. NB I note that there is potential for positive cumulative effects on climate with other wind farms in the area of the site.

Mitigation

10.17.151. Mitigation measures set out in the EIAR, for the construction, operation and decommissioning phases of the development, include siting and design to minimise footprint of development e.g. use of existing roads, local sourcing of aggregate materials, operation of plant and machines and waste management in accordance with best practice guidelines and decommissioning plan (Appendix 4-4).

Residual Effects

10.17.152. With the implementation of mitigation measures, the EIAR predicts short term imperceptible negative effects of greenhouse gas emissions from the construction phase of the development. Restoration of a segment of Eastwood River, with natural wooded riparian buffer will result in a long term imperceptible positive effect on climate. For the operational phase, the EIAR predicts a long-term moderate effect on climate because of reduced greenhouse gas emissions.

10.17.153. **The Assessment: Direct and indirect effects/Conclusion.**

10.17.154. I have examined, analysed, and evaluated Chapter 11 of the EIAR and the associated Appendix 11-1 and the proposed CEMP. I am satisfied that the applicant has identified the likely effects of the proposed development on climate, for all phases of the development. Further, I am satisfied that whilst the development will increase GHG emissions in the short term (with direct and indirect effects), in the longer term it will have a significant positive effect on climate, offsetting GHG emissions over the lifetime of the development, individually and in combination with other renewable energy developments, and contributing to national and European targets for GHG emissions.

Noise and Vibration

10.17.155. **Issues Raised**

10.18. Third parties raise concerns regarding noise and vibration from construction (including structural damage to properties) and noise during operation of the wind turbines. They refer to the adequacy of the 2006 Wind Energy Guidelines (WEDG), the timescale for new guidelines, to ensure protection of amenities and seek an appropriate baseline noise assessment and an assessment of likely noise during different weather conditions. It is also argued that an independent noise assessment be required or review by competent expert. Finally, it is argued that it is inappropriate to have different standards for participating and non-participating landowners (e.g. if ownership changed in the future).

10.18.1. **Examination, analysis and evaluation of the EIAR**

Context

10.18.2. Chapter 12 of the EIAR deals with noise and vibration. It assesses the likely effects of the development (all phases) on the nearest noise sensitive locations (NSLs). Associated Appendices are Glossary of Acoustic Terminology (A12.1), Copies of Calibration Certificates (A12.2), Noise Prediction Inputs and Parameters (A12.3), Tabulated Wind Turbine Noise Prediction Results (A12.4) and Wind Turbine Noise Contour Maps (A12.5)

10.18.3. For noise arising from construction works, construction traffic and vibration, BS and TII standards are referred to (section 12.3.2.1). For operational noise, the EIAR refers to:

- 2006 *Wind Energy Development Guidelines* (WEDG), and the noise limits set out in the document:
    - An appropriate absolute limit level in the range of 35 – 40 dB LA90 for quiet daytime environments with background noise levels of less than 30 dB LA90,10min;
    - 45 dB LA90,10min or a maximum increase of 5 dB above background noise (whichever is higher), for daytime environments with background noise levels of not less than 30 dB LA90,10min and;
    - 43 dB LA90,10min for night time periods.

- UK's Energy Technology Support Unit Guidelines (ETSU, 1996), *The Assessment and Rating of Noise from Wind Farms ETSU-R*-97, upon which the 2006 Guidelines are based, and which allow for a higher level of turbine noise at involved properties.
- The Institute of Acoustics *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* (IOA GPG) which standardise and update ETSU-R-97 and which are adopted for the assessment.
- The WHO Noise Guidelines for the European Region (2018).
- The draft WEDG, 2019.

10.18.4. Having regard to the poor characterisation of wind farm noise associated with the recommended noise limit of 45 dB $L_{den,}$ across industry criticisms of the 2019 draft WEDGs, the EIARs assessment of wind turbine noise is based on the 2006 WEDGs and supplemented by best practice guidance from ESTU-R-97 and the IOA GPG.

10.18.5. The EIAR identifies no limitations in respect of the noise and vibration impact assessment, and I am satisfied that no significant limitations are evident.

Baseline

10.18.6. A background noise assessment was carried out at six noise sensitive locations by installing unattended sound level meters. These are shown in Table 12-5, Figure 12-2 and in Appendix 12.5 (NMLs were moved in accordance with best practice, with atypical noise present). Survey duration was 4 weeks (in excess of the 2-week minimum requirements), with a variety of wind speed and weather conditions encountered (Figure 12-3). Rainfall and wind data was continuously recorded alongside noise.

10.18.7. Results of the noise monitoring data, for each monitoring location at standardised wind speeds, for daytime quiet periods and nighttime periods, are indicated in Figures 12-4 to 12-15. Derived $L_{A90, 10min}$ noise levels for various wind speeds, for each monitoring station, are indicated in Table 12-11 and are indicative of a quiet rural environment. The noise levels are conservative and based on the lowest derived background levels at various wind speeds for day and nighttime. The

Board should note that for locations not included in noise monitoring, the EIAR uses a noise 'envelope' based on the lowest levels derived from the various survey locations. This comprises a conservative approach and is applied separately for nighttime and daytime periods.

Potential Effects

10.18.8. Likely significant effects of the development are summarised in Table N1 below. Turbine noise is predicted from noise modelling software having regard to turbine size and sound power output of turbine type proposed to be used (Appendix 12.3 and Table 12-10). There is no allowance for tonal noise and the EIAR states that a warranty will be provided from the manufacturers of the selected turbine to ensure that the noise output will not require tonal noise correction.

10.18.9. Operational noise limits for the proposed wind farm are:

- 40dB $L_{A90,10min}$ in quiet environments with typical background noise of less than 30 dB $L_{A90,10min}$ (i.e. the upper limit of the noise parameter set out in the WEDG 2006 guidelines).

  In section 12.4.2 the EIAR states that 40dB $L_{A90,10min}$ noise limit is used having regard to (a) the noise limit of 45 dB A in areas of low background noise, set out in the EPAs' '*Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)'* and which is equivalent to 43 L_{A90} (i.e. the noise limit adopted in the EIAR is more stringent), (b) the lower threshold of 40 or 43 dB commonly adopted in planning conditions for similar developments that have been granted planning permission by ABP and local planning authorities (e.g. ABP 306706, 300686, 300460) and (c) the 2006 WEDGs states that *'An appropriate balance must be achieved between power generation and noise impact*.'

- 45dB $L_{A90,10min}$ for daytime in environments with typical background noise greater than or equal to 30 dB $L_{A90,10min}$ or a maximum increase of 5 dB(A) above background noise (whichever is higher), and

- 43dB $L_{A90,10min}$ for nighttime periods or a maximum increase of 5 dB(A) above background noise (whichever is higher) for nighttime periods.

10.18.10. As per the ETSU-R-97 guidelines a threshold of 45 dB $L_{A90,10min}$ has been applied to NSLs involved in the development. Applied noise criteria curves for NSLs and the wider 'envelope' are indicated in Table 12-12.

Table N1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• Noise environment likely to remain unchanged. Loss of opportunity to capture part of County's renewable energy resource and to restore segment of Eastwood River.
Construction	Wind farm. • Construction of turbines and hardstands. No direct, indirect, or cumulative significant noise or vibration effects at NSLs, given predicted noise levels and distance of NSLs from construction sites (Table 12-13 and standards in Table 12-1). Predicted effects are not significant, negative, short term. • Access roads. Construction noise emissions predicted to be within the fixed construction noise criterion for linear construction works (Table 12-4 and standards in section 12.3.2.1.1) at NSLs and no likely effects of vibration, due to setback from NSLs. Negative, not significant, short-term effects. • Temporary construction compounds. No significant construction noise associated with construction compounds (situated near T02, 320m from H014, and near substation, 110m from H016). Predicted noise and vibration effects are below the limits and/or thresholds identified, with negative, not significant short-term effects. • Borrow pit. Two scenarios assessed with construction work during daytime period (7am to 7pm), a. blasting, b. rock breaking. For both scenarios, mobile crusher in operation, and all borrow pit plant working simultaneously (Table 12-15): o Blasting (6 to 10 blasts, over an 8-to-12-week period). The Board should note that no detailed breakdown of predicted vibration or air over pressure from blasting is indicated. Notwithstanding this, predicted construction noise is well within construction noise criterion at nearest NSLs (Table 12-1). Effects will be negative, not significant, and short term. Noise levels lower than rock for breaking as reduced requirement for rock breaking. Individual blast operations will be audible at certain locations which may result in slight impacts. o Rock breaking. Predicted construction noise is well within construction noise criterion at nearest NSLs (Table 12-1). Effects will be negative, not significant, and short term. o Vibration. No effects at NSLs due to distance. Grid connection. • Substation. Noise associated with construction activities predicted to be 61 dB L_{AeqT} and within the construction noise criteria Table 12-1.

	No likely effects of vibration, due to setback from NSLs. Negative, not significant, short-term effects. • Cabling route. Noise calculations (Table 12-7) indicate total construction noise to range from 72 dB $L_{Aeq, 12hr}$ at 18m and 50 dB $L_{Aeq, 12hr}$ at 100m. Nearest NSLs to cable route are H013, H018, H023 and H073, all located 18-25m from works. Noise levels will be above significance criteria, but construction activity will vary and not be continuous i.e. moving at 100m per day and occur NSLs for less than one day. Negative, significant, brief to temporary when works occur at closest NSLs. Otherwise, noise effects will be negative, not significant, and short term. Vibration levels at closest NSLs will be below limit values set out in section 12.3.2.1.3. Effects will be negative, not significant, and temporary. • Construction compound (see above). Construction traffic. Has regard to estimates of increase in traffic on local road network for different phases of the development (1a, 1b, 2a, 2b – see 12.5.2.3). EIAR predicts no change to minor change in traffic noise for all routes, with the exception of L3248 leading to the site, major change in traffic noise (Table 12-19). (NB the text of the EIAR refers to major short-term changes for stage 1a and 1b for link 5, should state link 6 has major effect). The duration of 'major' effects corresponds for 9 days and therefore does not meet the threshold for significant effect (10 or more days or nights in any 15 consecutive day or nights – section 12.3.2.1.2). Predicted effect at the nearest NSL with noise from the additional traffic generated is negative, moderate, and short term.
Operation	• Wind farm. The EIAR, in Table 12-20, sets out the predicted wind turbine noise levels at locations with the top 10 predicted noise levels at 8m/s (wind speed at maximum noise output for turbine model). Omnidirectional turbine noise is below criterion curves, except for exceedances of 0.1dB and 0.2dB at location H036 at wind speeds of 7 and > 8m/s, during nighttime periods. The predicted effects are conservative and relate to conditions favourable to noise propagation (downwind of source) and include an uncertainty factor of + 2dB in accordance with the IOA good practice guidelines. Effects of operation on NSLs is predicted therefore to be negative, not significant, and long term. For H036 effect is determined to be negative, slight, and long term (impact will vary with wind and this is considered to be the greatest impact). • Substation. Noise at nearest NSL (H016), at c.250m from the substation is predicted to be 31 dB L_{AeqT}, with no significant noise emissions. • Human health. The EIAR refers to the characteristics of wind turbine noise and international and European research on the effects of this on human health effects. The general the conclusions of the research are that low frequency noise (including infrasound) or vibration from wind farms has any adverse effects on health.
Decommissioning	• As per construction, but less, with some infrastructure to remain.
Cumulative	• Construction. It is not anticipated that there will be any other construction activities that could give rise to significant cumulative

	impacts during construction. Noise emissions are not of enough magnitude to cause any increase in cumulative noise emissions exceeding the threshold for significant impacts at any NSL. • Operation. No other wind farms within 8km of the development site with no potential for cumulative effects. 110kV underground cabling will not generate any noise during operation. The proposed substation operates well within noise criteria. Effects will be negative, not significant, and long-term.

Mitigation

10.18.11. Mitigation measures are set out in section 12.6 of the EIAR. These include standard construction noise control measures, to be included in the CEMP, and for the sub-station where there is potential for significant effects at receptors within 25m of underground cabling works, additional measures to include:

- Temporary solid hoarding where NSLs are within 25m of works (predicted to reduce noise by 5-10dB) and to bring predicted levels (maximum 72dB) within the criteria for linear construction works (section 12.3.2.1.1 of the EIAR, BS 5228-1, 70dB in rural areas away from main road traffic and industrial noise) and/or
- Monitoring typical levels of noise and vibration during critical periods at sensitive locations.

10.18.12. If blasting is undertaken, detailed blast design will be carried out to keep vibration values within the criteria set out in section 12.3.2.1.3 (Peak particle velocity = 8mm/s – 20mm/s depending on frequency, see Table 12-3 as per TII guidelines). Standard mitigation measures, to minimise air over pressure effects are also proposed.

10.18.13. During operation, the EIAR states that substation plant will be selected to ensure that noise has no tonal or impulsive characteristics at any NSL. Effects will be negative, not significant, and long term. For wind turbines, mitigation measures include:

- Should predicted exceedances be confirmed at commissioning, curtailment of turbine(s) in relevant wind speeds and directions e.g. for T4 and T5, to reduce noise at H036 to limit values (Table 12-21).

- If amplitude modification (AM) occurs, the operator will employ an appropriately qualified acoustic consultant to assess the level of AM in accordance with IOA guidelines, with implementation of operational controls as required.
- Operational noise survey to ensure compliance with any noise condition, with curtailment of wind turbines using the wind farm SCADA system.

Residual Effects

10.18.14. With the implementation of mitigation measures, the EIAR identifies short term but not significant residual negative effects of noise or vibration for the construction and decommissioning phases of the development. For operation, the EIAR predicts that the noise levels associated with the wind farm will be within best practice noise criteria curves recommended in the 2006 WEDGs. It acknowledges that a new noise source will be introduced to the receiving environment, and that whilst ambient noise levels will increase by varying degrees, depending on receptor location, and turbine operating conditions typically dictated by wind speed, the predicted noise levels are within recommended criteria, with no significant effects on NSLs. For the proposed substation, residual noise levels are predicted to be not significant.

10.18.15. **The Assessment: Direct and Indirect Effects**

10.18.16. I have examined, analysed, and evaluated Chapter 12 of the EIAR, the associated documentation and submissions on file in respect of noise and vibration. I am satisfied that, having regard to the background noise environment, location of the proposed development relative to noise sensitive locations, predicted noise levels from construction plant/equipment and construction traffic, subject to the proposed standard best practice mitigation measures and binding noise limits and hours of construction, no direct, indirect, or cumulative significant adverse effects are likely on NSLs during construction works. Notwithstanding this, I refer to the applicant's response to submissions in which it is stated as a further precautionary measure, temporary screening can be placed along the boundary of the concerned resident's property[4] and pre and post condition surveys carried out (structural

[4] Joan Delaney, dwelling is situated on the L-3248, to the east of the proposed site entrance.

damage). This is not unreasonable, given the property owner's location to the east of the proposed site entrance. This matter could be addressed by condition.

Blasting and Vibration

10.18.17. I note that no predictions have been given for likely air over pressure or ground borne vibration for blasting, if carried out at the onsite borrow pit. However, blasting may not occur and if it occurs it will be carried out on a very limited basis (6 to 10 blasts, over an 8-to-12-week period). I am satisfied that the extent of reserves to be freed by blasting is not significant and that any blasts can be designed to comply with standard criteria for air over pressure and ground borne vibration, such that no adverse on structural integrity of properties arise.

Operational Noise

10.18.18. The WEDG 2006 recommend the following operational noise limits:

- In general, a 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations,
- In low noise environments where background noise is less than 30dB(A), a daytime noise limit of 35-40 dB(A), measured LA90,10,
- A separate night time noise limit of 43dB(A) to protect sleep.

10.18.19. The guidelines were largely based on the ETSU-R-97 document, *The assessment and Rating of Wind Farm Noise* (DTI, 1996).

10.18.20. The 2006 WEDG are considerably dated in particular in the context of rapidly changing wind energy technology. The draft 2019 WEDG proposed more stringent noise limits, consistent with WHO noise standards, with a Relative Rated Noise Limit (RRNL) in the range of 35 – 43 dB(A) to apply, while not exceeding the background noise level by more than 5dB(A) with an upper limit of 43 dB(A), and a maximum of 35 dB(A) where background noise levels are<30dB(A). The draft guidelines therefore propose lower operational noise levels.

10.18.21. It is stated in section 12.3.2.2 the EIAR that the guidelines were criticised by a cross industry group on the technical grounds (e.g. lacking detail, technical errors, ambiguities, inconsistences) and it is notable that the draft guidelines have not been adopted and that there is no indication of the timescale for any new guidelines.

10.18.22. Notwithstanding this, in 2013 the Institute of Acoustics provided an industry wide standardised and modernised approach to the technical assessment of wind turbine noise in '*A Good Practice Guide to the application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*'. The guidelines have been applied to the subject development and provide for example, a detailed assessment of background noise at different wind speeds and for different weather conditions at Noise Monitoring Locations (NMLs) and modelling to enable prediction of likely noise levels in at different wind speeds at different locations around the wind farm site (all NSLs).

10.18.23. In this instance, the applicant proposes noise limits which exceed the 2009 draft WEDGs but which are consistent with the application of the 2006 WEDGs, including the adoption of an upper noise limit, for quiet environments of 40dB(A) (background noise is <30dB(A)). It is argued that this noise limit is (a) less than the limit set out in the EPAs *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* which provides guidance on the assessment of noise impact on the local environment for certain activities i.e. typically industrial processes/activities but do include intensive agriculture, and (b) consistent with the noise limit levels required for wind farm development granted by the Board, including ABP-306706, 300686 and 309306. Given the absence of government guidelines and the caveats around the WHO guidelines (set out in section 12.3.2.2.1 of the EIAR), which refer to the 'conditional' nature of the guidelines i.e. that there is less certainty and 'low' quality of evidence to support the recommendations, I am satisfied that the applicant's approach is not unreasonable.

10.18.24. Based on the noise monitoring carried out, Table 12-11 of the EIAR indicates derived noise levels for the 6 NML, at various wind speeds and an 'envelope' location i.e. for all locations, in the absence of specific background noise measurements. The envelope is conservative and indicates a quiet noise environment i.e. derived noise levels at 3m/s are 27.6 dB(A) $L_{A90,10}$. At 5m/s, the derived daytime background noise level exceeds 30dB(A) i.e. where the environment is no longer a low noise environment (WEDGs 2006).

10.18.25. Appendix 12-4 sets out predicted noise levels at sensitive receptors, based on the noise criterion adopted for daytime and nighttime operation for their specific

location. For example, for the observers' properties, H009, H011, H031, H038 and H063, the following are situated in a quiet environment H011, H031, H038 and H063.

10.18.26. I note that the noise criterion applied for wind speeds of 5m/s is conservativity 40dB(A) i.e. as the background noise environment is >30dB(A) and in excess of the 30dB(A) threshold. I also note that the predicted daytime noise (all locations), at wind speeds of up to 5m/s, are all below 35dB(A) (see Appendix 12-4), the lower limit for daytime noise in a quiet environment set out in the WEDGs 2006.

10.18.27. With increasing wind speeds >5m/s, predicted noise levels increase, but typically well within 45dB(A) for daytime operation, the maximum noise limit for daytime operation (WEDGs 2006). For nighttime, all noise levels are within the criterion of 43dB(A), except for minor exceedances for nighttime noise at H036 at wind speeds of 7m/s and >8m/s (slight, long-term impact). However, mitigation measures are proposed for these, with turbine T4 and T5 curtailed to reduce effects to below nighttime noise limits.

10.18.28. Having regard to the foregoing, I consider that the applicant's assessment of operational noise is clearly related to background levels, conservative and robust. Further, it is evident that predicted noise at all NSLs, at low wind speeds, is well below the proposed noise criterion adopted (40dB(A)) for locations of low background noise. For all other wind speeds, for both day and nighttime, noise levels are within acceptable limits (with curtailment of T4/T5). For the observers' properties, H009, H011, H031, H038 and H063, predicted noise levels at low wind speeds are well below proposed noise criterion (40/45dB(A) (Appendix 12-4) and within nightime noise criterion of 43dB(A). On the basis of the information presented, the conservative analysis carried out, the predicted noise levels and criterion used for assessment, I am satisfied that whilst the noise environment of the wind farm site and surrounding area will change, operational noise impacts will not be significant or adversely affect residential amenity. Notwithstanding the foregoing, the Board may wish to consider further review by independent expert.

10.19. Should permission be granted, the applicant has undertaken to undertake a noise survey to ensure compliance with any noise conditions and to curtail any turbine using the wind farm SCADA system if necessary. This approach is reasonable and consistent with good practice and can be controlled by condition.

10.19.1. The 2009 draft Guidelines state that at NSLs where there is an interested landowner, an increase in the noise limits can be agreed between all relevant parties, and I do not consider this to be unreasonable. Any effects on properties likely to be taken into account by a purchasing landowner should a change in landownership arise.

10.19.2. Regarding health effects, I have had regard to the research carried out in respect of the likely effects of wind farms on human health and the summary of this set out in the EIAR (see Population and Human Health section), and I am satisfied that there is no conclusive objective evidence of significant health effects due to wind turbine noise, including for tinnitus (no references to any increase in this condition with wind farms). However, as indicated in the EIAR (e.g., Health Canada), I would accept that there is evidence of increased annoyance with the proximity of wind farms and that increased stress levels can consequently arise.

10.19.3. **Conclusion**

10.19.4. Having regard to the examination of environmental information in respect of noise and vibration, in particular the EIAR and supplementary information provided by the applicant, I am satisfied that the main significant direct and indirect effects on noise and vibration arise during the construction phase of the development and that these effects can be mitigated by the application standard good construction practices. During operation, the noise environment in which the development is situated will change, however, noise levels will not be significant and can be controlled by condition. There is no potential for cumulative effects given the absence of permitted or planned construction activity in the vicinity of the site and significant distance of the development from other existing, permitted, or proposed wind farms.

10.19.5. **Material Assets, Cultural Heritage and the Landscape**

10.19.6. Chapter 13, 14 and 15 deal respectively with cultural heritage, landscape, and material assets (traffic and other). They are addressed below in this order.

Cultural Heritage

10.19.7. **Issues Raised**

10.19.8. The DEHLG note that the aerial photography submitted identifies a previously unrecorded archaeological site within the proposed development site. It advises that the extent of the archaeological site, which is to be preserved *in situ*, must be adequately determined to ensure that it can be adequately protected. The Department recommends conditions to be attached to any permission to align with conditions no. C3, C5 and C6 of the OPR Practice Note PN03, with appropriate site-specific additions/adaptions.

10.19.9. **Examination, analysis and evaluation of the EIAR**

Context

10.19.10. Chapter 13 of the EIAR deals with cultural heritage. It provides an assessment of the likely effects of the development on archaeology, architecture, and cultural heritage. The associated Appendix is 13-1 which comprises a photographic record of the development site.

10.19.11. The cultural heritage impact assessment includes mapping and desk-based research (multiple sources) and field inspections. Type of effect and magnitude of effect are defined in section 13.2.4 and methodology for assessing visual (indirect effects) in section 13.2.5. This includes distance from cultural heritage site, significance of cultural heritage asset and number of turbines visible. No limitations were encountered during field work, and I can see no evidence of any. I note that the assessment of indirect effects (e.g., effects on setting) was undertaken using the Zone of Theoretical Visibility map, Visual Impact Assessment, and photomontages/photo wires on the grounds that many sites are in private lands with no public access. Having regard to my inspection of the proposed site and surrounding area, this methodology is not unreasonable and provides an appropriate approach the assessment of indirect effects.

Baseline

10.19.12. The baseline environment is described in section 13.3 of the EIAR. It has regard to published sources for archaeological, architectural, and cultural heritage sites within the development site, grid connection route and junction accommodation works at the J22/M7, and its wider area (zone of influence). These include data on/from UNESCO World Heritage Sites, National Monuments, Recorded Monuments, excavations database, topographical files of the National Museum of Ireland, aerial photography, protected structures, NIAH and Historic Gardens survey, cartographic evidence, townlands and administrative boundaries and Protected Structures. Whilst there are numerous features of archaeological, architectural, and cultural heritage in the wider area of the site, the development site is largely removed from these.

10.19.13. Within the development site:

- There is one redundant *recorded monument*, TN029-030 (natural hillock) within the development site (Table 13.4 and Figure 13.4). It is situated c. 189m west of T5, with no current visual trace of it (Plate 13.3).
- A previously unrecorded rectangular crop mark within the site, visible on aerial survey and situated in pasture c.315m to the northwest of T1 and c.23m northeast of the proposed temporary borrow pit (Figure 13.7). This is the feature referred to by the DEHLG. No visible above ground features remain but it is stated that the aerial imagery suggest that it represents the remains of a moated site.
- A circular feature is indicted on the first edition OS map immediately south of the proposed road to T8 and south of an existing farm track (Figure 13.15). The EIAR states that the feature is denoted with a dashed/dotted line and is as an enclosure or ringfort would typically be. Further, it is not indicated on the later second edition 25- inch OS map and field survey found no evidence for an archaeological monument or later cultural heritage feature at the location (pasture on low hillock). The EIAR states that it is possible that it is the hillock that is denoted on the historic map.

10.19.14. The nearest Protected Structure to the site, is a two-storey house in Borrisbeg, TRPS97, c.1.1km to the southwest of T7 (Figure 13.9) and the nearest structure listed in the NIAH is situated c. 2.1km to the south-west of the nearest

proposed turbine, T7, and comprises St Mary's Church in Templemore (Reg. 22308002) (Figure 13.12). The nearest historic garden comprises that associated with Eastwood House. The southern portion of the development site is located within the demesne, as shaded in grey on the first edition OS historic map (Figure 13.14). T9 and its associated hardstand are located within the demesne, however, no garden or demesne features are denoted on the historic mapping in this area, nor were any detected during field survey carried out by the applicant, although it is noted that the area is currently planted with young conifers.

10.19.15. Nearest recorded monuments to the grid connection route are shown in Figure 12.16 and comprise an enclosure, c.280m to the northwest of the proposed substation, an earthwork, c.270m to the north east of the underground cable route. No above ground traces of these monuments are apparent.

10.19.16. In the location of temporary, minor accommodation works at Junction 22 of the M7, the EIAR states that the land through which the proposed works extends is within the CPO of the motorway and it is considered that all archaeological investigations and mitigation deemed necessary in this area during the construction stage of the motorway was undertaken at that time.

Potential Effects

10.19.17. Likely significant effects of the development, as identified in the EIAR, are summarised in Table CH1 below.

Table CH1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• The potential to impact on cultural heritage would be removed. • Opportunity to capture part of the County's renewable resource and to restore a section of the Eastwood River would be lost.
Construction	• Indirect (e.g. setting/visual). None at construction stage. • Direct (physical impact). Earthmoving activities have the potential to negatively impact on known and potential archaeological heritage. o No potential for any direct effects on any UNESCO WHS, National Monuments, those subject to a preservation order or recorded monuments, protected structures, or upstanding features of local cultural heritage merit, as no features located on or in immediate vicinity of the wind farm site, grid connection site, minor works area at Junction 22 of M7. TN029-030 (redundant record) is located within the site c.

	189m west of T5. The monument is not considered to be archaeological in nature and no direct impacts to it are therefore identified. ○ Sub-surface archaeology. Given rectangular crop mark on wind farm site (outside footprint of development with no potential for direct effects), proposed groundworks and greenfield nature of site (wind farm and grid connection), there is potential for direct, negative, and permanent effect on sub-surface archaeology. No potential for adverse effects of minor accommodation works at junction 22 of M7 as works fall within area which previously underwent significant groundworks associated with the construction of the motorway. ○ NIAH structures and historic gardens. No NIAH structures located within the wind farm site, grid connection site or temporary works area at junction 22 of M7 so no potential for direct impacts. T9 and its hardstand are situated within the demesne of Eastwood House, but with no direct impact on to the historic garden of Eastwood House (c.780m to the southwest of T9) or to any demesne features.
Operation	• Indirect (context/setting). ○ UNESCO WHS – No potential for indirect effects as UNESCO sites are >20km from development site (wind farm and grid connection. ○ National monuments – No effects on any National Monuments or monuments subject to a preservation order as no theoretical visibility with proposed turbines and grid connection works, except PO No. 57/1938 Tower House at Tinvoher, c.6.6km south of nearest turbine T9 and c.7.6km of proposed substation, with potentially 7-9 turbines visible. Given distance from development site, no change to immediate setting of tower house with no significant effect (Table 13.10). ○ Recorded monuments – One redundant record of recorded monument within the wind farm site (TN029-030). 134 recorded monuments in 5km of nearest turbine (Figure 13.5). 131 of the 134 monuments are in areas where 7-9 turbines visible (ZTV) (Figure 13.6). Theoretical significance of effects is indicated in Table 13.11 and is based on worst case scenario (no screening), distance and presence of upstanding remains. Significance of effects ranges from not significant to moderate, with moderate effects for TN023-047 (children's burial ground, 1.9km to T1), T029-033 (ringfort, 1.9km to T9) and TN029-070 (ringfort, 1.9 T9). However, effects will be less severe due to natural screening, which will alleviate or remove impact on setting altogether. Some monuments are not readily visible in the landscape and others are on private land and not accessible to public. No recorded monuments within 100m of proposed grid connection, nearest monuments (TN029-031, c.270m to north of end of cable route; TN029-029 c.280m to northwest

	of substation) have no above ground traces. No potential for visual effects on setting. ○ Sub-surface archaeology. Potential for visual effects on crop mark located within the site and any other sub-surface features, should they exist. No above ground element for visual effects with wind farm and proposed grid connection. ○ Protected structures. Potential visual effects on 105 protected structures within 5km of nearest turbines (Figure 13.9 to 13.11, Table 13.12) range from not significant to moderate (moderate effects on TRPS97, two storey house, Borrisbeg, 1.2km to T7 and TRPS102, Butlers lodge, 1.6km to T7). Assessment is worst case scenario and takes no account of screening with vegetation etc. No PS within 100m of grid connection, nearest is c.1.9km to the northeast of sub-station and c.1km to northeast of cable route. No change to immediate setting of PS. Change to wider setting of PS is acknowledged but is not considered to be significant. ○ NIAH and Historic gardens. 63 no NIAH structures and 13 no. historic gardens within 5km of nearest turbines with theoretical visibility of 7-9 turbines from all NIAH structures/historic gardens (Figure 13.12 & 13.13). T9 and associated hard stand in demesne for Eastwood House (few surviving features). Potential effects set out in Table 13.13 and 13.14. Based on distance to nearest turbine and number of turbines visible, with no screening effects of vegetation etc. Effects are not significant to moderate, with moderate for Eastwood House only. ○ Features of local cultural heritage. No upstanding structures or items of local cultural heritage merit located within or adjacent to the proposed wind farm footprint, with no potential for visual effects. Stone bridge associated with underground electrical cable route, with no visual effects on bridge predicted.
Decommissioning	• No significant potential impacts on archaeological, architectural, or cultural heritage, any potential direct impacts will have been resolved through mitigation during construction.
Cumulative	• Majority of extant planning applications within 20km comprise application for residential dwellings and agricultural development, with potential for these to affect the setting of cultural heritage. PA would have considered this issue in their assessment of the application. <u>Other wind farms (within 20km).</u> • *Construction* (direct effects). No direct effects on UNESCO WHS, National Monuments in State Care, RPS Structures or NIAH sites located within the footprint of the project. No potential for direct effects or therefore cumulative direct effects with other wind farms. One recorded monument TN029-030 within site boundary but redundant record. No direct impacts on recorded monuments or potential for cumulative effects. After mitigation no potential for

	significant effects on sub-surface archaeology and therefore no potential for significant cumulative effects. • *Operation* (impact on setting). o No potential for effects on UNESCO sites (none in 20km of development). No significant effects predicted for monuments in state care from the development, except for PO NO. 57/1938 Tower House at Tinvoher (no change to immediate setting but non-significant change to wider setting). Cumulative ZTV demonstrates theoretical visibility of proposed development turbines and the operational turbines of Brukana and Lisheen wind farms to the south east and partial theoretical visibility of operational Monaincha wind farm to north (see Landscape section). There is therefore potential for cumulative impacts to the wider setting of the tower house at Tinvoher, but with distance from the wind farms to the south east, cumulative effects on setting are not regarded as significant. o Recorded monuments. One redundant record in wind farm site (TN029-030), no above ground remains so no potential for visual effects. 134 no. recorded monuments within 5km of proposed turbines, with not significant to moderate effects (above). No other existing or permitted wind farms within 5km. The ZTV demonstrates that the Brukana and Lisheen turbines and some of the Monaincha turbines may theoretically be visible in addition to the proposed nine no. turbines but at a distance of >5km. At this distance, there is potential for cumulative impacts to the wider setting of recorded monuments, however no significant effects are identified and no potential cumulative effects to the immediate setting of monuments will occur. o Protected structures and NIAH. None of the existing or permitted wind farms are within the 5km study area. The ZTV demonstrates that the Bruckana and Lisheen turbines and some of the Monaincha turbines may theoretically be visible in addition to the proposed nine turbines but at a distance >5km. EIAR acknowledges there is therefore potential for cumulative impacts to the wider setting of Protected Structures and NIAH items, however, no significant effects are identified and no potential cumulative effects to the immediate setting of such structures will occur.

Mitigation

10.19.18. Mitigation measures are set out in section 13.5 of the EIAR and include provision of a fenced buffer zone of 20m around the outer extent of the crop mark visible on aerial photography to the northwest of T1 (Figure 13.7), pre-development archaeological testing of the proposed project infrastructure in previously undisturbed greenfield areas of the site under licence from the National Monuments

Service, with appropriate reporting to the NMS and PA and further mitigation if required (avoidance, excavation, buffer zones etc.). In addition, it is stated that natural screening, boundaries, buildings, and vegetation are not considered in the ZTV model and therefore potential visual effects may in reality be less severe than predicted in the assessment of effects.

Residual Effects

10.19.19. With the implementation of mitigation measures no significant residual effects on any feature of cultural heritage interest is predicted.

10.19.20. **The Assessment: Direct and Indirect Effects**

10.19.21. I have examined, analysed, and evaluated Chapter 13 of the EIAR, all the information provided in respect of archaeological, architectural and cultural heritage, and to the submission made by the Department. I am satisfied that the applicant understanding of the baseline environment, by way of desk and site surveys, is comprehensive and that the key impacts in respect of likely effects on cultural heritage have been identified. Notably, the site is largely devoid of above ground features of cultural heritage interest and features identified on the site (redundant recorded monument west of T5, circular cartographic mark east of T8) are avoided in the layout of the development. The crop mark to the north of the borrow pit and T1 has been identified and the extent of the site, can be adequately determined in advance of construction by condition, and preserved *in situ,* as recommended by the Department. The potential for sub-surface archaeological features has been identified by the applicant, and pre-development testing is proposed and in response to the submission the applicant has indicated a commitment to adhering to the Department's recommendation. This matter can be addressed by condition.

10.19.22. The development site extends into the Historic Garden associated with Eastwood House, with T9 situated in a field that forms part of the shaded area associated with demesne on the Department of Housing, Local Government and Heritage's Garden Survey. In practice, whilst the field structure associated with the demesne, few features of the garden remain e.g. e.g. with no woodland, orchards, kitchen garden etc. Effects on the remains of the demesne will arise (affecting its setting) but will not therefore be significant.

10.19.23. With regard to features of cultural heritage in the wider landscape, having regard to inspection of the site and the wider area, the location of these features which are largely removed from the development site, the detailed landscape and visual impact assessment carried out, the nature of the development site situated in a largely flat landscape with landscape features significantly limiting distant views across the landscape, I am satisfied that the conclusions of the EIAR are accurate, and that (a) moderate visual effects (setting) will arise from the small number of features in the immediate area of the site e.g. the protected structures TRPS97 and TRPS102, c.1.2-1.6km to the south west of T7 and the wider landscape context for individual sites and features of cultural heritage will change. However, and importantly, the local context for these features will not be demonstrably or significantly affected by the development.

10.19.24. **Conclusion**

Having regard to the examination of environmental information in respect of cultural heritage, it is considered that the main direct and indirect effects comprise the potential for direct adverse effects on sub-surface archaeology, and the landscape and visual effect of the development on the setting of features of cultural heritage (indirect and cumulative effects), with greatest effects on features in the immediate area of the site. The potential for adverse effects on sub-surface archaeology can be mitigated by condition and landscape visual effects will be mitigated by the distance of the development from these features, the character of the landscape in which the site is situated and landscape features which will screen the visual effects of the development and protect the local setting of these features.

Landscape

10.19.25. **Issues Raised**

10.19.26. Issues raised in submissions refer to the visual impact of the development on residential dwellings, the appearance of turbines (ratio of tip height to hub height), cumulative visual impact with existing and permitted wind farms (in Tipperary and neighbouring counties) and impact on Devil's Bit landmark (adequacy of assessment and potential for impact on approach to Templemore from the east).

10.19.27. **Examination, analysis and evaluation of the EIAR**

Context

10.19.28. Chapter 14 of the EIAR addresses the potential effects on landscape and visual amenity. Associated Appendices are Landscape and Visual Impact Assessment (LVIA) Methodology (A14.1), Landscape Character Assessment Tables (A14.2), Photomontage Viewpoint Assessment Tables (A14.3), AO LVIA Baseline Map (A14.4), Photowire Visualisation Booklet (A14.5) and Photomontage Booklet (EIAR Volume 2).

10.19.29. The potential for landscape and visual effects of the development have informed the strategic siting of the development and the layout and the scale of the proposed turbines. Notably Appendix 14-1 explains the methodology adopted for the LVIA including the mapping of the zone of theoretical visibility, route screening methodology (to identify actual visibility in comparison to theoretical), identification of photomontage viewpoints and methodology for assessing significance of landscape and visual effects and cumulative effects. The methodology adopted is conservative and consistent with policy and best practice guidelines.

10.19.30. Limitations include the ZTV presenting a 'bare ground' scenario. This is addressed by 'ground truthing' by way of multiple field surveys and Route Screening Analysis for visibility of the development in close proximity to the site (Figure 14-4). Draft photomontages ('photowires') from additional locations to the 14 presented in the Photomontage booklet (EIAR Volume 2) but were not selected for the final Volume 2 due to the limited visibility of turbines or more appropriate location in relation to nearby receptors. These photowires are shown in Appendix 14-5.

10.19.31. The Board should note that the Landscape and Visual Impact Assessment Area (LVIA) and ZTV is consistent with the WEDG, 2006 (and draft 2019 Guidelines), which recommend a 20km ZTV for turbines with a height >100m. The assessment of landscape character effects (LCA study area) has regard to a 15km distance, on the grounds that the development is not likely to have an effect on landscape character beyond this distance. Having regard to my inspection of the development site and surrounding area, this approach is not unreasonable.

Baseline

10.19.32. The landscape (e.g. landscape designations, landscape character), visual (e.g. key visual receptors) and cumulative baseline (e.g. other wind development), of the development site and wider area is described in section 14.4, 14.5 and 14.6 of the EIAR.

10.19.33. The *landscape baseline* has regard to the zone of theoretical visibility (ZVT) identified in the EIAR and shown in Figure 14-1, landscape designations as set out in the Tipperary, Laois, Offaly and Kilkenny Development Plans, the landscape character of the site, landscape characterisation guidelines set out in the 2006 WEDGs and the landscape character of the wider landscape setting, having regard to the landscape character areas located within the ZTV. The *visual baseline* has regard to designated scenic routes and views, viewing areas (marked on OSi maps), settlements, recreational routes, recreational, cultural heritage and tourism destinations and transport routes. The *cumulative baseline* has regard to operational and permitted wind farms within 20km of the development site (Figure 14-19).

10.19.34. In summary the following baseline characteristics are identified.

Landscape Baseline

- Landscape designations and policy context:
    - Tipperary County Development Plan, 2022-2028
        - Amenity areas, scenic routes, and designated viewing points. Falling within the 20km ZVT are two secondary amenity areas, Devil's Bit Mountain Range c.5km to the west of the site and Slievephelim Complex c. 15km to the southwest of the site, six

scenic routes and two designated viewing points (Figure 14-5, Tables 14-2 and 14-3).

- Landscape character assessment and landscape sensitivity designations. The development site falls within a generalised landscape designation '*Landscape Archetype A'* – The Plains (Tipperary CDP), working landscapes containing most settlements and services, as well as large continuous areas for pasture, tillage and peat harvesting and containing many rivers and historic sites. Within this archetype, the site falls within subtype A1 Lowland Pasture and Arable. Landscape Archetype A and subset A1 are the lowest sensitivity landscape types. Within the generalised landscape designation eight Landscape Character Areas occur within the ZVT (Figure 14-15), with the development site falling within Templemore Plains, LCA 5, a large, gently undulating lowland area framed by Devilsbit and Borrisnoe Mountain to the west and extending to Roscrea in the north and the county boundary with Laois to the east. LCA 5 has an overall 'low sensitivity' rating (i.e. low sensitivity to change) and 'low compatibility' for wind energy development (Table 6.2, TLCA reproduced in Figure 14-9, EIAR). Conversely, Table 6.3 of the TLCA (reproduced in Figure 14-10, EIAR) indicates that wind farms are 'Likely to be compatible with reasonable care' in agricultural land with natural vegetation. Having regard to this policy context, particularly the relatively low sensitivity designations of the LCA, the prevalent nature of this landscape type and landscape archetype in the county and the very high compatibility of the existing land use on the site to wind energy (as prescribed in policy) the EIAR considers that selection of the site as a suitable landscape for the development of wind energy is entirely appropriate.

- Wind Energy Strategy. The development site lies within an area of the county designated in the TCDP Renewable Energy Strategy (TRES)

that is open to consideration for new wind energy development (Figure 14-7 and Figure 14-8).

- Landscape policy within other surrounding counties. Sensitive landscape designations falling within Counties Offaly (Offaly CDP 2021-2027), Laois (Laois County Development Plan 2021-2027) and Kilkenny (Kilkenny County Development Plan 2021) are also shown in Figure 14-5 and are listed in Tables 14-5 and 14-6. These comprise designated areas of High Amenity and Other Eskers (Offaly) and designated scenic routes (Offaly and Kilkenny). Landscape character areas, for these counties, falling with the ZTV of the subject development are indicated in Figure 14-15. These include two 'interim landscape character areas' for Offaly, to the north of the ZTV area (Birr Plains and Central Wetlands) for which a landscape character assessment has yet to be published and which the applicant has derived from site visits, desk studies and assessments carried out by the applicant's landscape and visual team.

- Landscape character of the site and grid connection. The wind farm development site is described as relatively flat, low lying agricultural land located at a topographical height ranging from 120m (north) to 105m (south), with the slope southerly and generally towards the Eastwood River and River Suir which flow through the site. Landcover is predominantly a working agricultural landscape with fields enclosed by hedgerows and treelines. The northern part of the site is primarily agricultural pasture, enclosed by deciduous treelines and the southern part has young commercial forestry. Views within the site area are primarily of the modified agricultural landscape, with some open views towards Devil's Bit Mountain (see plates 14-4 to 14-11). The proposed substation is located in grassland field, which will be screened by vegetation enclosing the field and a small topographical rise between the site and the nearest residential property. The underground grid connection will be situated in 870m of the public road and c.1.2km within agricultural fields, with the proposed loop-in connection end masts also in agricultural fields (Plates 14-12 to 14-16). Landscape sensitivity is considered to be Low.

- Landscape characterisation in the 2006 WEDGs. The development site is considered to be best described as 'Hilly and Flat Farmland' landscape character type, as set out in the 2006 WEDGs.
- Landscape character of the wider landscape setting. The wider landscape of the development site is characterised by a rural agricultural landscape, with Templemore c.2.5km to the southwest of the nearest turbines, and Clonmore village c.2.6km to the east of the nearest turbines. Linear settlements are focused along regional roads and the N62 national road, the main transport route within 5km of the development. The N62 connects Thurles, to the south of the study area, to Roscrea, to the north of the study area. Raised bogs make up a large proportion of the landcover in the wider area, particularly to the east of the LVIA study area, also associated with historic forestry on adjacent lands and more recently wind energy development. The elevation of the study area increases to the north towards Slieve Bloom Mountain and more dramatically to the west where Devil's Bit and Kilduff Mountains are situated. Historic landscape features occur in the wider landscape (see cultural heritage section above).

Visual Baseline

- Visual baseline receptors are identified in Figure 14-17 (visual baseline) and in Figure 14-18 (visual baseline with ZVT). Theoretical visibility is considered in Tables 14-14 to 14-19, with receptors screened in or out for further assessment, based on theoretical visibility. Visual receptors screened out for further assessment are summarised in Table 14-20 and those screened in for further assessment in Table 14-21. Visual receptors screened in include designated scenic routes and scenic views in the area of the site, nearby settlements, recreational and tourist routes and transport routes. Receptors which are screened in provide the basis for viewpoint selection for photomontages and photowires.
- The visibility of the proposed development from residential receptors is considered in section 14.5.3. Based on the multiple surveys conducted the EIAR determines that most visibility will occur within 5km of the proposed turbines with sensitive properties located in close proximity to the site likely to

have views of the proposed development and are likely to have the greatest visual effects arising as a result of the proposed development. The EIAR states that 14 no. representative viewpoints are selected for assessment of visual effects on these receptors (Volume 2). Photowires A to T are also provided in Appendix 14-5).

Cumulative Context

10.19.35. The assessment of cumulative effects focuses on other wind energy development, as these very tall vertical elements in the landscape have the greatest potential for cumulative effects. Non wind farm development, proposed, permitted existing included in Appendix 2-1, is not considered to give rise to significant cumulative landscape and visual effects. Other wind farms within the LVIA study area are indicated in Figure 14-19 and in Table 14-22 and include operational and permitted wind farms. The EIAR does not take account of the proposal for 11 turbines at Brittas and adjacent townlands, c.10.5km to the south of the site. This is not unreasonable and there is no planning application for the development or details on likely size, location etc. in the public domain (see Planning History).

10.19.36. The largest grouping of operational wind farms lies +7.8km to the southeast comprising Bruckana and Lisheen Wind Farms (52 turbines). Monaincha Bog wind farm lies 10.6km to the northeast (15 turbines) and smaller wind farms lie in the wider area.

Potential Effects

10.19.37. Likely significant effects of the development, as identified in the EIAR, are summarised in Table L1 below.

Table L1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• No changes would be made to the current land use practices, small scale forestry and agricultural land. • Opportunity to capture part of the County's renewable resource or to restore a section of the Eastwood River would be lost.
Construction	• Landscape. Cut and fill will have direct effects on the landscape, with greatest effects where existing landcover, vegetation and spoil are removed. Excavation will be visually contained by surrounding landform. Short term, moderate, negative.

	• Visual. Most substantial visual effects will arise from construction activities e.g. building tower sections, erection of turbines, and from equipment and vehicles required to transport and erect wind farm components e.g. large crane and large haulage vehicles. Slight, short term, negative visual effects. • Ancillary project elements: o Site access roads and hardstand areas. Flat features, landscape and visual effects will be highly localised short term and slight. o Turbine delivery route accommodation works (minor works at junction 22 of M7). Not significant, temporary, negative landscape and visual effects. o Borrow pit and spoil management areas. Not significant, temporary, negative landscape and visual effects and temporary negligible effects on landscape respectively. o River restoration. Slight, temporary, negative visual effects and positive landscape effects with rehabilitation of landscape o Meteorological mast. Localised effects during construction, negative, short term and slight. o Temporary construction compound. Highly localised landscape and visual effects, negative, short term and slight. • Grid connection. o Underground cable installation and end masts. Short term, localised and transient as works move along cable route and include loss of roadside vegetation, soil/road surface stripping, excavation and installation of cabling etc. Increase in density of electricity towers but of similar scale to existing, no substantial alteration to landscape or visual effects with slight, negative landscape and visual effects. o Substation. Situated within an agricultural field, screened by existing vegetation and topographical rise from nearest residential properties and the public road. Highly localised effects, negative, short term and slight.
Operation	<u>Wind farm</u> • Landscape effects. o Landscape of the site. Major changes in landscape character with the introduction of vertical manmade structures. Site is located in a modified, remote, agricultural working landscape of local value and low sensitivity. Low sensitivity combined with substantial magnitude of change equates to Moderate effect on the physical fabric of the landscape of the site, a significant effect (Table 1-2, Appendix 14-1). Effects on the perceptual and aesthetic character of the site are also Moderate. o Effects on landscape receptors of high sensitivity. No significant impact on character or setting of the following

	landscape receptors due to the substantial distance and limited visibility of the proposed development: ▪ Devil's Bit Mountain. No visibility of development from west (Figure 14-6). Partial visibility from the east where turbines will be seen as small elements, with existing wind farms (VP7 and PWVP-J), at distance (7km from summit viewpoint) in flat expansive working landscape. Slight residual landscape effect). ▪ Slievephelim Complex. No visibility from majority of secondary amenity area. Turbines will be visible at distance (14km), as small vertical elements in the background (PWVP-L). Not significant residual effect. ▪ Slieve Bloom Mountains. Foothills of Area of High Amenity within LVIA study area, at distance (14km). Limited patches of theoretical visibility, with turbines seen in background of views, within a flat expansive landscape (PWVP-O). Negative Not Significant residual effect. o Landscape character areas. Assessment of landscape effects on the different landscape character areas falling within 15km of the proposed development are summarised in Table 14-23 and set out in detail in Appendix 14-2 (grading scale of landscape effects is set out in Appendix 14-1). Effects range from Not Significant (T-LCA 17, K-LCA A1, L-LCA A2, L-LCA 4) to Slight (T-LCA 5, L-LCA 3) and Moderate (T-LCA 22, Devil's Bit Upland). • Visual effects o Viewpoint assessment (set out in full in Appendix 14-3). Predicted effects, in advance of mitigation, are Imperceptible (VP6), Slight (VP4, VP5, VP8), Moderate (VP1, VP2, VP3, VP13, VP14), Significant (VP7) and Very Significant (VP9, VP10, VP11, VP12). • Visibility and visual effects on specific visual receptors in LVIA study area o Designated scenic routes and views. Five scenic routes/views brought forward for assessment. *T-SR58*, closest scenic route to turbines. Direction faces west. Views to the east (of wind farm) are typical of rural environment. VP1 illustrates likely effect on views from route looking south (considered above). Theoretical views from section of *T-SR54* but no actual views due to screening in the landscape (PWVL-1). *T-V61*, no theoretical visibility due to intervening topography (PWVP-M). *T-SR63* high level of roadside screening on northern side of road (PWVP-T), any views of development, turbines would appear as very small background features and momentary views. *KK-V14*, represented by VP2, turbines visible but distant and will be viewed as small elements in background of expansive view. Turbines add to density but do not substantially increase

	horizontal extent. Slight residual effect predicted (see above). ○ Settlements. Templemore – From within the town full or partial screening by buildings/vegetation/infrastructure. Greatest views on exiting town towards wind farm e.g. VP3 and PWVP-H. Clonakenny – Turbines removed from settlement and screened by existing vegetation (VP4). Slight visual effect (above). Templetouhy – Turbines will be viewed as small elements within the background of the view, with substantial screening from vegetation (VP5). Slight effect (above). Errill – Turbines will be largely fully screened by intervening localised topography and infrastructure (PWVP-S). Some limited locations where there will be views of turbines from within the settlement. Overall imperceptible residual effects. Thurles – Multiple patches of no theoretical visibility, large areas of theoretical visibility but substantial urban screening. VP6 situated on outskirts of town. Turbines appear as small elements in the background view. Imperceptible visual effect. Borrisoleigh – Turbines not visible from the location given distance from wind farm site and level of vegetative screening (PWVP-L). No likely visibility or, therefore, visual effects. ○ Recreational routes and destinations, cultural heritage, and tourist destinations. Devil's Bit Loop and Devil's Bit Mountains (height 479m)– Views from peak of Mountain (VP7) and from multiple isolated locations along loop (PWVP-J). Turbines visible in expansive view, with overall Significant effect, in advance of mitigation (see above, for VP7). Kilduff Mountains – Similar to views from Devil's Bit Loop/Mountains (height 445m). Black Castle, the Big Church and Cemetery, Templemore – No likely visibility of turbines (PWVP-I) due to substantial screening. Clonburren Castle – VP8 represents views towards turbines from location, but VP8 is c.3km closer to wind farm. No significant visual effects (see above). Castle not at a high elevation and screening from vegetation likely to provide at least partial screening. No significant effects likely. ○ Major transport routes. N62 National Road – likely intermittent views of turbines within 5km of wind farm (VP1, VP3, VP10, PWVP-D and Figure 14-4). Outside 5km views are largely screened (PWVP-A, -B, -C and -K). R501/R433 Regional Roads – Within 5km most visibility along R433 to south/east of turbines, with Very Significant visual effects (V9) before mitigation (visibility also represented in VP13 and PWVP-S). Beyond 5km, views will be heavily limited by high levels of vegetation in flat landscape. R502 Regional Road – Turbines visible within 5km (PWVP-G and VP9 similar view). In the flat, heavily vegetated landscape, visibility of turbines will reduce substantially >5km. M7 Motorway – High levels of screening from bank/vegetation (PWVP-A) with no significant visual effects. M8 Motorway – In general high levels of screening from raised banks/roadside vegetation (PWVP-T), some intermittent

	views but with no significant effects for visual receptors travelling on route. N75 National Road – Represented by VP6, given orientation, distance, screening, no significant effects to visual receptors. • Residential visual amenity. Figure 14-21 indicates setback distances from residential receptors. 61 sensitive receptors (including 1 derelict property) within 1km of the turbine locations, situated on local roads to the north, east, west, and south of the site. o Sensitive properties within 1.5km – Turbines will be visible with substantial change in residential visual amenity (but not over large horizontal area). Representative views from VP11, PWVP-E, VP12, PWVP-N, VP9 and VP10. Baseline views are typical of agricultural landscape in surrounding area. Field structure, vegetation, and other elements of the landscape act as a physical landscape buffer and provide a sense of scale in relation to setback distance of turbines (all adhere to 500m setback, WEDG 2006 and 4 x tip height draft WEDG 2019 – third party sensitive receptors). Scale of turbines decrease substantially with distance, in flat heavily vegetated landscape. o Sensitive properties beyond 1.5km – Effects on residential visual amenity dramatically reduces with topography and screening in the landscape having a greater screening effect (VP13, VP3, Figure 14-21). <u>Grid connection</u> • No visual effects from underground cable. Cable end masts depicted in VP14, visibility of towers will be very localised (flat, heavily vegetated landscape). Substation removed from nearest sensitive property, and screened by vegetation and topography (small rise in field). Intermittent visibility of lightening towers may occur. Visual effects of substation highly localised, Negative and Slight.
Decommissioning	• Decomissioning. To comprise dismantling and removal of turbines (e.g. by crane) and ancillary infrastructure, with foundations to remain in place and be reseeded. Slight, Negative, Short visual effect.
Cumulative	• Construction. Not considered. However, landscape and visual effects are confined to the immediate area of the site, which is removed from nearest sensitive receptors. No other developments are identified where construction activities are concurrent. Significant cumulative effects highly unlikely. • Operation. o Landscape – Cumulative effects on landscape character considered in detail in Appendix 14-2. Site is located in a flat agricultural landscape to the east of Devil's Bit and Kilduff Mountains. The landscape is heavily vegetated with resulting intermittent views of existing wind farms (Monaincha Bog, Bruckanaa, Lisheen I and II and Lisheen III wind farms). There will be additional areas and locations where turbines will now be visible, but views will remain

	intermittent. Highest cumulative landscape effects arise in relation to Devil's Bit Mountain LCA (Tipperary LCA 22) where a Moderate residual effect will arise. o Visual. Wind farms within 20km of the development site shown in Figure 14-23 (and to the southeast Figure 14-24, to the north east Figure 14-25 and to the west Figure 14-26), Cumulative Comparative ZTVs, indicating additional areas where theoretical visibility of turbines (cumulative or proposed) would be possible. The location of the development in the flat, heavily vegetated landscape and large separation distances between wind farms results in limited occasions where turbines are viewed in combination with other cumulative turbines (including in views from strategic roads), with such views available mostly only from topographically elevated locations, as demonstrated in photomontages and photowires referred to above. This includes from views towards the turbines and in the opposite direction (e.g. to the southeast and northeast of the proposed wind farm). In combination views will be possible from Kilkenny's Scenic Viewpoint 14, to the east of the LVIA study area and Devil's Bit Mountain to the west. These are represented by VP2 and VP7 respectively, with predicted Moderate and Significant effects (in the absence of mitigation). Given the setback distance, expansive panoramic landscape in which existing and proposed turbines are situated, established presence of wind turbines, no increase in horizontal extent, no Significant visual effects are predicted. The development will have a limited cumulative visual effect in terms of increasing in a small number of instances, views of turbines across the LVIA study area.

Mitigation

10.19.38. Mitigation measures are set out in section 14.7 of the EIAR. Measures are typically industry standard and include layout and design to ensure minimal loss of valuable landscape receptors and biodiversity corridors and use of existing roads, minimising cut and fill, retention of stripped soils for reinstatement/regrading and revegetation (use of local seed source).

10.19.39. Mitigation factors in respect of visual effects (Appendix 14-3) include features of the existing environment such as topography, vegetation, field structure, which screen views of the proposed development and intervisibility of proposed development with existing or permitted wind farms, orientation of designated scenic views or scenic routes, location of turbines relative to direction of travel, distance (where relevant), even spacing of turbines, limited horizontal extent (in wider

expansive view), relative height of turbines in relation to mountainous terrain in the background, relative location to other wind farms with views in opposite directions (where relevant) and setback from turbines for residential development (development adheres to minimum of 500m setback in the current WEDG and 4 x tip height in 2019 draft guidelines).

Residual Effects

10.19.40. With the implementation of mitigation measures (including monitoring), residual effects are:

- Landscape effects. Slight effects on the landscape of the site, with revegetation around footprint of the development. No significant effects on Devil's Bit Mountain, Slievephelim Complex or Slieve Bloom Mountains, with distance from amenity areas and limited visibility/context of view (flat, expansive, working landscape). Slight to Moderate effect on LCAs (no Significant Effects), with greatest residual effect on T-LCA 22 Devil's Bit Uplands (Moderate). Effects on the LCA are mitigated by limited area of LCA affected, successful accommodation of wind energy development in the landscape in view from the LCA and the absence of material effects on the character of the LCA with the addition of the proposed turbines.
- Visual effects. Imperceptible (VP6, VP8), Not significant (VP5), Slight (VP2, VP4, VP13), Moderate (VP1, VP3, VP7, VP9, VP14), Significant (VP10, VP11, VP12). Significant visual effects occur to the immediate west, north and northeast of the site, from local roads in closest proximity to the wind farm site. Greatest effects on visual residential amenity at receptors within 1km of the wind farm, beyond which scale of turbines in view will quickly reduce.

10.19.41. Chapter 14 concludes that no significant landscape effects have been identified and significant visual effects only have potential to occur at a low number of residential properties located within 1km of the proposed turbines. Overall visibility of the proposed project throughout the LVIA Study Area is deemed to have no significant effects.

10.19.42. **The Assessment: Direct and Indirect Effects**

10.19.43. I have examined, analysed, and evaluated Chapter 14 of the EIAR, all of the associated appendices and submissions on file. I have also inspected the site and the surrounding area. I am satisfied that the applicant understanding of the baseline environment, by way of desk survey, field research and route screening analysis, is comprehensive and that the key impacts in respect of likely landscape and visual effects have been identified. Further, I am satisfied that the conclusions of the report are appropriate, with the key direct and indirect effects arising from the introduction of large structures to the rural environment, and the potential for landscape and visual effects. In particular, I am satisfied that the proposed development will have a significant impact on the pastoral landscape character of the development site but, beyond this, given the location of the site in a largely flat landscape and the prevalence of features within the wider landscape, effects on landscape character outside of the immediate area of the site will not be significant.

10.19.44. With regard to visual effects, I am satisfied that the most significant visual effects of the development occur within 1km of the site, significantly reducing with distance due to natural topography, and natural and manmade features within the landscape. This includes views from nearby residential dwellings and public roads, in particular, where there are open views of the site. From more distance locations, views will be possible from elevated viewpoints, notably Devil's Bit mountain to the west and from the elevated lands to the east in the area of KKSV14 (represented by VP7 and VP2), with the wind turbines visible, but at distance, located in an open/expansive landscape and not dominant. Cumulative effects will also arise when the turbines are viewed from these more elevated locations, where the development will be seen alongside or in the same landscape (i.e. when looking in different directions), to existing and/or proposed turbines. In the limited locations where such direct and cumulative views are possible, the development will intensify the presence of turbines, but not result in significant effects given the relatively small number proposed, distance from vantage points and open/expansive landscape (e.g. VP2).

10.19.45. In submissions, third parties and prescribed bodies have raised a number of issues in respect of landscape and visual effects, and I comment on these further below.

Visual impact of the development on residential dwellings

10.19.46. Local residents have raised concerns regarding the visual impact of the development on properties. As discussed, above I consider that the most significant visual effects will arise for locations within 1km of the development site, in particular where views are not screened or have limited screening, such as from the public roads to the northeast of the site and I would accept that substantial landscape and visual effects are likely to arise. Notwithstanding this, the proposed turbines are set back from nearest residential dwellings by 4 x tip height i.e. c. 740m. At this distance the turbines will be visible, but not overbearing on any individual dwelling. Further, visual effects will be mitigated by mature vegetation in the foreground, the modest number of turbines and the open layout.

The appearance of turbines (ratio of tip height to hub height)

10.19.47. Laois CC raise concerns that the turbines exceed the ratio 1:1 for rotor and hub heights i.e. that a ratio of 1:1 gives rise to the typical tall, slender proportional appearance of turbines and that when the rotor diameter exceeds by a significant margin the hub height, the entire structure may become dominant in views.

10.19.48. In response to the submission the applicant states that the chosen dimensions are based on the current market availability and design in conjunction with the aim to maximise the site's potential for renewable energy development. The response also refers the Board to the strategic siting of the wind farm and good wind farm design, as set out in the EIAR. In section 4.1.2 of the response the applicant refers to the general absence of guidance on preferred rotor diameter to hub height ratio. It refers to Scottish guidance (SNH, 2017, Siting and Designing Wind Farms in the Landscape) which recommend factors to consider when choosing the most appropriate turbine dimensions for a site including 'proportion of blade length to tower height' and 'consistency with other existing and consented turbines the vicinity'. The response document, in Table 5, provides the rotor diameter to hub height ratio for wind farms in the area of the site, which range from 0.83:1 to 1.57:1, with the majority >1. It is argued that the 1:1 ratio proposed is not sustainable and that it is important that the developer align with industry trends and technology advancements.

10.19.49. Chapter 3 of the EIAR considers alternatives and examines different layout of turbines, but not alternative designs. The proposed turbines have the following

dimensions; tip 185m, rotor diameter 163m and hub height 103.5m. Ratio for rotor and hub heights is 103.5:163m i.e. 1:1.57. As accepted by the applicant, the ratio is in excess of 1:1, however, the turbines remain overall slender in design, and are not of themselves incongruous. Further, the landscape and visual impact assessment has demonstrated, as per the guidelines in the 2006 WEDG, that the turbines are appropriate in scale to the landscape setting in which they are situated. Turbines will appear substantial in proximity to the site, but beyond 1km with become less visible due to intervening topography/landscape features. Further, when viewed at distance, the turbines in the flat landscape are evenly spaced and subservient to the more background mountains which they are seen against (e.g. from the west, VP7 and the east, VP2). I am satisfied therefore that the design of the proposed turbines is acceptable.

Cumulative visual impact with existing and permitted wind farms (in Tipperary and neighbouring counties)

10.19.50. Laois County Council state that the ZTV includes the western part of the county and that the Board should be satisfied that the development has been robustly assessed. Similarly, Kilkenny County Council state that the visual impacts of the development and cumulative visual impacts with existing and permitted wind farms, should be considered in the overall assessment of the proposed wind farm. Having regard to the detailed analysis of landscape and visual effects set out in the EIAR, and as considered above, the landscape context for the development, the largely limited visibility of the development from adjoining counties, and lack of significant effects on views from locations in adjoining counties where the turbines will be visible (alone and in conjunction with permitted and planned wind farms), I am satisfied that the landscape and visual effects of the development have been robustly assessed and that significant residual issues will not arise.

Impact on Devil's Bit landmark

10.19.51. Tipperary County Council state that they are not satisfied that the impact of the development on Devil's Bit landmark has been adequately assessed and recommend that the applicant demonstrate that the development will not impact on the setting of the landmark on approach from Templemore from the east in the townland of Farranderry (R443, to the south of the development site). In response to

the submission, the applicant provides further analysis and assessment, informed by the visibility appraisals and assessment tools used in the LVIA. The assessment demonstrates that the field of view from the R443 at Farranderry towards the landmark does not overlap with the wind farm site (Figure 1) such that Devil's Bit landmark cannot be viewed in combination with the wind farm development, without the receptor turning to see the turbines – Figure 2. The submission concludes that there are no significant effects on the setting of Devil's Bit from this stretch of the regional road. From my inspection of the application site, the applicant's submission, views from the R433 in the townland of Farranderry towards Devil's Bit mountain, and having regard to the relative orientation of the public road, landmark and wind farm, I am satisfied that there are no overlapping views, and that the development would not have a significant effect on this landmark.

10.19.52. **Conclusion**

10.19.53. Having regard to the examination of environmental information in respect of landscape and visual effects, in particular the EIAR, the associated technical appendices, the submissions from the Tipperary County Council, adjoining planning authorities and from the public, it is considered that the main significant direct and indirect effects are significant effects on the landscape character of the site, with the introduction of substantial wind energy development, significant visual effects for sensitive receptors within 1km of the site, particular where there are open views of the development site, reducing with distance from the development site, and cumulative landscape and visual effects in particular from distant and more elevated views to the west (Devil's Bit mountain/VP7) and to the east (KK-V14/VP2). Effects will be mitigated by reinstatement of temporary construction areas, replacement hedgerow and woodland planting within the site, natural and manmade features within the development site and wider landscape. However, local residual landscape and visual effects will remain. Having regard to research of public perception of wind farm development, I am mindful that such effects will not always be considered as negative and that effects are not of such significance to warrant refusing permission.

Material Assets (Traffic and Transport)

10.19.54. **Issues Raised**

10.19.55. Issues raised in submissions comprise safety of N62/L3284 junction, the potential for use of an alternative access to the site, compliance with official policy of TII (design standards and effects on the national road network), use haul routes, requirement for a Road Safety Audit and alternatives to the grid farm cable route (in public roads).

Context

10.19.56. Chapter 15 of the EIAR deals with Material Assets including transportation infrastructure and Irish Rail (traffic and transport). Associated documents comprise Traffic Counts (A15.1) and an outline traffic management plan is included in section 3.4 of the CEMP (Appendix 4-3, EIAR). No limitations are identified, and I can find no evidence of any.

Baseline

10.19.57. The baseline environment is described in section 15.2.2 of the EIAR. The location of the site, in the context of the local road network, is indicated in Figure 15-1a. The drawing also shows the proposed turbine delivery route (Dublin port of entry, national and motorway network to M7, exit at junction 22, N62 to L-3248 and proposed direct access to site for abnormal size loads). Figure 15-1b indicates the existing road network for alternative delivery routes for standard HGVs.

10.19.58. Locations for autotrack assessments are shown in Figure 15-2a and for link flow assessments in Figure 15-2b. Data for existing traffic flows on links was obtained from TII (automatic traffic counters maintained by TII for the link between junction 21 and 22 on the M7) and from all day traffic counts (remaining six links). Table 15-2 shows the all-day traffic flows by count location for the year 2023 (2-way vehicles). The EIAR has regard to the road type (using TII standard documentation for link design) and capacity and determines that the link flows observed on the road network are high, ranging from 88% (Link 2, N62 north of L3284) to 188% (Link 3, N62, Templemore Main Street). Construction year is anticipated to be 2028 and background traffic for this year is calculated using TII growth rates and is indicated in Tables 15.5, All day traffic flows by location, 2-way vehicles. Traffic count data was

also used to determine percentage of HGVs on the proposed delivery routes, Table 15.6, All day flows, percentage HGVs and flows by vehicle type, year 2023 (percentages range from 2.8% link 6, to 10.8% link 1).

10.19.59. The EIAR study boundary includes a portion of the Dublin to Cork Irish Rail line which runs in a northeast to south east direction, c.20m south of the proposed grid connection route. The Railway bridge OB 202 is located c.30m from the proposed underground cable route.

Trip Generation.

10.19.60. Trip generation is estimated for the construction phase of the development from data collected from other wind farm construction projects and the proposed duration of construction. The construction period used in the assessment is conservatively 18 months (against an estimated construction period of 18-24 months). Construction is divided into two phases, with phase one comprising ground works, tree felling, construction of foundations, substation, internal cabling, and grid connection etc. (over 16 to 17 months) and phase two wind turbine component delivery and construction.

10.19.61. Trip generation for phase one is set out in Tables 15-8 and 15-9. Table 15-8 indicates vehicle trips associated with the pouring of concrete foundation for each turbine i.e. for 9 no. pouring days, the development will give rise to 960 truck movements (equivalent to 512 no. 2- way PCUs/day). On remaining days Table 15-9, there will be an average of c. 17 truckloads per day, or 81.4 no. 2-way PCUs/day. Greatest vehicle movements (remaining days), arise with movement of stone to the wind farm and grid connection sites.

10.19.62. During turbine delivery (phase 2) there will be a mix of extended artics transporting parts of the turbines and standard large HGVs transporting cables, tools etc. Trip generation is set out in Table 15-10, with a further 108 total truckloads (72 extended artic and 36 other loads). Turbine delivery will progress at a rate of 3 extended artic trips by convoy to the site on 5 days per week, over c.5 weeks, with deliveries taking place during the night in consultation with An Garda Siochana. On a further two days per week, for a period of 5 weeks, the remaining equipment will be delivered to the site (total trips shown in PCUs in Tables 15-11 and 15-12).

10.19.63. Construction employee traffic is based on 70 staff members employed on site at any one time, reducing to 45 staff during turbine construction stage. Conservatively all transport is by car, with an average of 2 sharing (70 PCU movements, each trip is two-way, during groundworks and 45 PCUs during turbine construction). Construction traffic vehicles are described in section 15.2.5 and in Figures 15-3 a to c (including for transport of turbine components).

10.19.64. During operation, the wind farm will be unmanned and remotely monitored. Maintenance will generate c.1-2 staff employed on site at any one time.

10.19.65. During decommissioning, there will be similar, but significantly less than the trip generation estimates for construction (many of the materials to be brought to site will be left in situ).

Potential Effects

10.19.66. Likely significant effects of the development, as identified in the EIAR, are summarised in Table TT1 below.

Table TT1: Summary of Potential Effects

Project Phase	**Potential Direct, Indirect and Cumulative Effects**
Do Nothing	• No additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.
Construction	• Background traffic volumes and proposed traffic volumes are shown for the four typical construction stage scenarios in Tables 15-13 to 15-16. Percentage increases in traffic on the links analysed are shown in Tables 15-17 to 15-20. Predicted flows are added to all links (to provide a worst-case scenario). Percentage increases are greatest for the smallest roads e.g. 211.1% for L-3248, concrete pouring phase (9 days). • The link capacity assessment is presented in Tables 15-22 and 15-23. With the exception of the M7 (32%) and L3284 (9%) the remaining links on the delivery route are forecast to operate over capacity by the construction year 2028 without the additional traffic forecast to be generated by the development. The addition of construction traffic increases background traffic most significantly for concrete pour phase (over 9 days), with greatest % age increase on L3248 (9% background traffic to 29% concrete pour). • Effect on junctions. The EIAR provides a junction capacity assessment for the junction most affected on the delivery route, between the N62 and L-3248 which leads to the main access junction, for the movement of 70 workers (35 cars) during the AM and PM peak. Results of the capacity assessment (Table 15-24 and Figures15-5 a to d), indicate that the junction will continue to

	operate within capacity (maximum RFC change is from 4.0 to 5.7% during AM peak and from 5.9% to 8.5% during the PM peak). • Traffic management of large deliveries. May require minor accommodation works along the turbine delivery route e.g. hedge trimming, tree cutting, temporary relocation of powerlines/poles etc. and local road widening. • Abnormal load route assessment. Carried out for turbine route from M7 to site and swept path analysis for locations 1, 2 and 4 for blade and tower transporters (Figure 15-2a, 15-6&7, 15-10&11, 15-17&18). Short term closure of eastbound arm of M7 required. Location 2 (temporary access for abnormally sized loads) to be used at night only and managed by an Garda Siochana and haulage company (Figures 15-8, 15-10 and 15-11). New permanent access to site has junction radii for HGVs (TII DN-GEO-03060) and 2.4mx90m sightlines (Figures 15-8&9). Junction 3 to be upgraded, to provide junction radii for HGVs, and L-7039-1 to be widened to 5m for 460m, visibility splays are 2.4x90m (Figures 15-12 to -14). Temporary arrangements for crossing of L-7039-1 (junction 5) for abnormal loads (at night, under supervision), and arrangements for construction traffic shown in Figures 15-15 to 18, with 2.4mx70m sightlines. • Provision for sustainable modes of travel. EIAR refers to infrequent public transport, likely travel by car and the potential for use of minibuses to transport staff to and from the site. • Having regard to the foregoing, Temporary, Slight Negative effect on delivery routes, during 9 concrete pouring days and 341 days when general construction materials delivered to the site, with Moderate effects on the short section of the L-3248. For the 24 days when turbine components will be delivered (nighttime), a Negative, Temporary, Slight effect on traffic is predicted. For the 9 days of turbine construction, when general materials are delivered to the site, increase in traffic volume will have a Temporary Imperceptible Negative effect on the M7 and Temporary, Slight, Negative effect on the rest of delivery routes. • Grid connection (Figure 15-4a). The onsite substation, temporary construction compound and volume of stone for the underground grid connection cable route have been considered in the assessment of effects on link capacity above. All traffic for the grid connection and substation will be delivered via the L-7039 and L-70391. The underground grid connection will be installed in a mix of on road and off-road alignments (Table 15-25), with some temporary road closures (c.20 days) and some short-term requirements for local diversions (Figure 15-4b and 15-4c). Traffic associated with construction of cabling route estimated to be c.14 daily return trips (by truck transporting materials and a trip by minibus for staff). Effects will be transient, Temporary and Slight. • Irish Rail. No direct effects on Dublin to Cork railway line and no requirement to cross Railway Bridge OBC 202. Railway line runs at a minimum of 20m to the south of the grid connection cable route, with no impact on railway embankment or zone of influence of 5m.

Operation	• During operation, effects on flow links will be imperceptible (1-2 staff and similar vehicle trips, some potential for recreational/visitor trips), with Imperceptible effects. • Irish Rail. Potential for electromagnetic interference from high power cables parallel to railway track and associated signalling cables. EMFs from 110kV underground cables diminish quickly with distance e.g. from 4µT to 0 µT at 10m. Cable route is a minimum of 20m from track.
Decommissioning	• As per construction but reduced in scale as much of the infrastructure will remain in place (e.g. foundations, hardstanding, roads, cable ducts). • Irish Rail. As per construction.
Cumulative	• Construction (predicted effects below, based on assessment of the potential for cumulative traffic effects arising from permitted development within 25km of the subject site, Appendix 2.1). o Other wind farms (Table 15-26). Potential for negative, short term and moderate effects on M7 and N62 if construction of Upperchurch wind farm (ABP-310171) is constructed alongside the subject development. o Other developments in planning system (Table 15-27). Having regard to the location and scale of developments identified with potential for cumulative effects, predicted cumulative effects are Slight. o Irish Rail. No potential for significant effects during construction of subject development, therefore no potential for significant cumulative effects.

Mitigation

10.19.67. Mitigation measures are largely for the construction phase. These are set out in section 15.2.17.2 of the EIAR and include mitigation by design i.e. selection of most appropriate delivery route, and provision of a detailed Traffic Management Plan incorporating all mitigation measures, as proposed in the CEMP to be finalised and agreed with the road's authority and An Garda Síochána prior to construction works commencing. Measures include standard good practices for the management of construction traffic. In addition, the applicant proposes:

- A dry run of the extended transport vehicles to be carried out of the entire turbine delivery route prior to construction and adherence to relevant guidelines for works near railway lines and consultation with IEDR 30 days prior to works.
- Ongoing engagement with Irish Rail during operation will also be carried out, with implementation of 'retransmitter' if required in agreement with Irish Rail (EIAR

refers to French study where c.95% of cases where interference arose, were settled amicably with installation of rebroadcaster by wind farm developer).

- Construction phase to be scheduled, where possible to avoid the construction phase of the permitted Upperchurch wind farm (ABP310171).

10.19.68. A decommissioning plan will be prepared for agreement with the PA at the expiry of the planning permission (Appendix 4-4). It will include a material recycling/disposal plan and traffic management plan.

Residual Effects

10.19.69. With the implementation of mitigation measures (including monitoring), residual effects arising from the construction phase of the development, with the additional traffic arising on the public road network, are predicted to have a slight to moderate negative effect on existing road users. Operational effects are predicted to be imperceptible. Decommissioning effects will be similar to construction, but less and slight to imperceptible.

10.19.70. **The Assessment: Direct and Indirect Effects**

10.19.71. I have examined, analysed and evaluated Chapter 15 of the EIAR, the associated technical appendices and submissions on file in respect of traffic effects. I am satisfied that the applicant understanding of the baseline environment, by way of desk and site surveys, is comprehensive and that the key impacts in respect of likely effects on traffic and transport, as a consequence of the development have been identified. Further, I consider that the key direct and indirect effects of the development will be short term effects on the local, regional, and national road network during the construction phase of the development. Movement of construction workers, materials, plant, and turbines to the site will result in substantial vehicle movements. However, the applicant has demonstrated that these make relatively modest impacts on the traffic flows on the public road network, due to context (i.e. high levels of existing flows), temporary nature of effects (e.g. 9 days for concrete pouring, or timing of movements (e.g. abnormal loads, at night under supervised conditions). Greatest effects are likely to be on the local roads providing direct access to the site (L3824) and to a lesser extent the substation (L7039).

10.19.72. The junction capacity assessment for the N62/L3248 (the junction that will experience greatest increase in traffic), as set out in Table 15-24, has demonstrated that the increase in traffic will not significantly increase delays. Further, details have been provided which demonstrate how abnormal loads can access the site.

10.19.73. Submissions by third parties, local authorities and prescribed bodies have raised a number of issues in respect of traffic and transport, which I address below.

Safety of JN62 and L3824 and Alterative Access

10.19.74. From inspection of the application site, it is evident that there is a shallow dip on the N62, north of the junction with the L3248. I would estimate this to be some 200m north of the N62/L3248 junction. This would provide a theoretical forward visibility to the junction of c.200m against a required Y-distance of 215m (national roads). However, as stated the dip is shallow and not significant. Further, the junction is existing, no data has been presented by any party on substantial accident rates associated with it and neither the County Council's Roads Department nor TII raise any objections to its use on safety grounds.

10.19.75. With regard to alternatives, in response to the submission, the applicant refers to section 3.2.5.6.3 of the EIAR which considers alternatives to the proposed site access. Location of the temporary access road (abnormal loads) is based largely on proximity to the N62 (given access will be from J22 of the M7). Alternatives examined for the *abnormal loads* were to take the access off the L3824, using existing farm entrances, or via a new abnormal load entrance on the N62. However, these were not favoured over the proposed temporary entrance as a result of additional land take, environmental impacts and compliance with TII national road policy (new temporary/permanent entrance off the national road).

10.19.76. Alternatives to the *proposed site entrance*, off the L3824, were existing private farm access points off the N62, the L-3248, the L-7039 and the L-70391. These were discounted on the basis of inadequate sightlines, bringing traffic past residential properties, lack of compliance with TII requirements (new temporary/permanent entrance off the national road).

10.19.77. Having regard to the foregoing, and mindful of government policy set out in '*Spatial Planning and National Roads Guidelines for Planning Authorities'* which seeks to maintain the safety and capacity of national roads and avoid the creation of

new accesses and the intensification of existing accesses to national roads where a speed limit greater than 50 kmh applies, I am satisfied that it is appropriate in principle to locate entrances to the development site off the N62, as proposed. This includes the temporary access for abnormal loads which will be used in prescribed and temporary circumstances, which I consider to be acceptable with no short term or long term significant effects on the national road network.

Design of Temporary Access Abnormal Loads

10.19.78. TII also raise concerns that the design of the temporary access, does not appear to be in accordance with DN-GEO-03060 and that the applicant does not provide a Design Report in accordance with DN-GEO-03030 (*Design Phase Procedures for Road Safety Improvement Schemes, Urban Renewal Schemes and Local Improvement Schemes*).

10.19.79. In response to the submission, the applicant:

- Clarifies that the design of the proposed permanent access, 90m northeast of the N62/L-3248 junction, is in accordance with TII DN-GEO-03060 for standard HGVs and visibility splays required by the Tipperary CDP 2022-2028 (Figure 15-8 and 15-9 and site photographs).
- States that the temporary access for abnormally sized loads (Figure 15-8) is located on the southern side of the L-3248, directly into the junction with the N62. The junction is not designed in accordance with TII standards and no sightlines are provided as the access will only be used for 52 nights under supervision when a convoy of 3 abnormally sized loads will be escorted to the site, with transient traffic management to be provided on the N62 and L-3248. Outside of deliveries, the access will be closed and once construction is completed the junction will be fenced off and reinstated to its original state. Should the temporary access for abnormal loads be required during operation or decommissioning, it will be reopened and used in the same manner. The junction will also be constructed internally, via the site access junction for standard HGVs. Having regard to the foregoing, it is respectfully submitted by the applicant that a 'Design Report' is not required (not designed to TII standards, specific and temporary use under supervised conditions).

Notwithstanding this, the applicant appends a Design Report to the submission.

10.19.80. I have noted the Design Report appended to the applicant's submission, the temporary nature of the proposed entrance to the development site to be used infrequently, its location adjoining the L-3248 and its use under strictly controlled conditions. Having regard to these conditions, and as stated, I am satisfied that the location of the temporary access road is not inappropriate and, subject to use in the manner proposed, would not compromise the safety or capacity of national roads and would avoid the creation of new accesses and/or the intensification of existing accesses to national roads.

Haul routes/structures on haul route

10.19.81. Planning authorities and the TII require the applicant to consult with the appropriate roads' authority/interested parties (e.g. PPP Concessionaries) for any potential haul route, for any required works to comply with TII standards and to be subject to a Road Safety Audit as appropriate and for any damage to the national road to be repaired. TII also require clarification on the use of abnormal sized loads.

10.19.82. In response to the submission, the applicant has indicated willingness to consult with relevant parties prior to delivery of abnormal roads, and advises that no abnormally sized loads will be used along haul routes (axle loadings will not exceed standard accepted limits). Having regard to the forgoing, I am satisfied that consultation with the relevant roads' authority can be addressed by condition. Further, it is also reasonable that any required works comply with TII standards and be subject to RSA as appropriate.

Road Safety Audit

10.19.83. TCC recommend RSA to be carried out for the project with particular focus on the temporary and permanent access routes on the public road. In response to the submissions the applicant refers to TII Road Safety Audit Guidelines (GE-STY-01024) and state that the development does not meet the criteria for provision of a RSA. Notwithstanding this, the applicant commits to commissioning a Stage 1 and Stage 2 Road Safety Audit. This matter can be controlled by condition.

Cabling

10.19.84. Tipperary CC state that the cabling for the development should be placed in the carriageway as a last resort and that installation across culverts or streams should be below the invert of the stream to ensure longitudinal adjustment to road surface is not compromised. Third parties argue that the applicant has not addressed the issue of alternatives to cabling in the public road (raised in scoping).

10.19.85. The applicant does not respond to this issue. However, I note that a relatively short length of cabling is proposed along the L-7039-1, L-7039 and L-7038 over c.1.02km on road distance in total (Table 15-25). The rest of the underground cable route is across agricultural land. This length of underground cabling is not excessive, in terms of its impact on the public road, and facilitates and efficient connection for the wind farm to the national grid. Installation depth can be addressed by condition.

10.19.86. I note that plans for the development do not indicate planting behind the proposed sightlines, or reinstatement of hedgerows along all widened roads. If the Board are minded to grant permission for the development, I would recommend that this matter is dealt with by condition, in the interest of visual amenity and biodiversity.

10.19.87. **Conclusion**

10.19.88. Having regard to the examination of environmental information in respect of traffic and transport effects, in particular the EIAR and submission from the planning authority, prescribed bodies and third parties, I am satisfied that the key direct and indirect effects of the development will be a short term increase in traffic on the public road network in the area of the site, with greatest effects on local road leading to the site (L3248) and for the concrete pouring phase of the development. Short term effects on the national road network will arise with the nighttime delivery of turbine components. Impacts on the public road network can be mitigated by traffic management measures set out in the draft Traffic Management Plan and conditions of the permission.

Material Assets (Other)

10.19.89. **Issues Raised**

10.19.90. Issues raised in submissions relate to wind take on neighbouring lands and effects on telecommunications (interference with farming monitoring devices, internet services/mobile services). The planning authority recommends conditions in respect of the community benefit fund (to be in line with the government's RESS).

Context

10.19.91. Chapter 15.3 of the EIAR deals with Other Material Assets, comprising utilities, waste management, telecommunications, and aviation. Associated documents include in Appendix 15.2 a signed protocol with the applicant and RTE, which in effect requires the applicant to remedy any interference on communications arising from the wind farm.

10.19.92. The EIAR refers to the potential for wind turbines, like all tall structures, to interfere with broadcast communications (e.g. radio, TV) by acting as a physical barrier or causing scattering to microwave links, causing, for example, flicker effects on radio signals and effects on domestic receivers (typically those situated behind or to the side of a wind farm). Wind turbines also have potential to interfere with other communication and navigational systems e.g. tower to tower microwave communication links, airborne and ground radar systems. Effects can be avoided by design (micro-siting) or use of repeater relay links out of line with the wind farm (as indicated in the WEDGs 2006 and draft WEDGs 2019).

Baseline

10.19.93. The baseline environment includes:

- Electricity. The Ikerrin to Thurles 110kV OHL, to the east of the site, c.2km from the nearest turbine T8, a 38kV line that traverses the northwest corner of the site in the townland of Knocanroe, c.800m from nearest turbine T2.
- Water. Templemore Public Water Scheme and Source Protection Area are located c.1.2km to the west of the proposed development, on the opposite side of the N62. Irish Water watermain runs along the R433 and will be crossed by the proposed grid connection underground cable. Mains valves are located c.5m from the underground cable route.

- Telecommunications. Four operators who have 6 no. telecommunication links traversing the site with 3 no. links oversailing the site and 1 no. link passing through the centre of the site (near T4), see Figure 15-18.
- Department of Defence. The site is located in MOA5. Protocol as set out in Draft Air Corps Wind Farm/Tall Structures Position Paper (2014) requires notification should a developer wish to erect a structure taller than 45m in this area.
- IAA. No airports or aerodromes within or adjacent to the site (nearest is Birr, c.26km to the north).

Potential Effects

10.19.94. Likely significant effects of the development, as identified in the EIAR, are summarised in Table MAO1 below.

Table MAO1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects
Do Nothing	• Potential for effects on material assets would be removed.
Construction	• Electricity infrastructure and supply. Potential for effects on 38kV OHL in the townland of Knockanroe with delivery of turbine components (need to travel under the line). Loop-in connection to 110kV Ikerrin to Thurles OHL, with potential for interference or breakage during construction phase. Effects predicted to be temporary, moderate, negative impact on electricity supply/infrastructure. • Water infrastructure/supply. Potential for effects on Irish Water main and mains valve located in R433 (grid connection). The construction phase (wind farm and grid connection) may give rise to hazardous wastes such as oil, diesel etc, as well as mixed municipal waste. This is a short-term negative moderate impact on waste management facilities.
Operation	• Electricity infrastructure and supply. Similar to construction, if replacement turbine components, or maintenance of grid connection infrastructure required. 63MW of electricity to be supplied to the national grid per annum. • Water infrastructure/supply. As for construction, if maintenance of underground cable route required. • Waste. Potential for hydrocarbon waste e.g. oil from turbine maintenance and maintenance of substation transformer. Waste from welfare facilities to be used by operational and maintenance staff. • Telecommunications/EMFs. One telecommunications link will traverse the site (other links run along site boundaries removed from

	turbines or oversail turbines). As illustrated in the ESB EMF booklet 2017 (section 15.3.5.2.2 above), EMF from 110kV underground cables diminishes quickly with distance from cable dropping from 4µT to 0.5µT at 10m away, reducing to almost 0µT at 20m.The proposed Grid Connection cable route will be sited at a minimum 20m from the railway track. • Defence/Aviation. The Proposed Project falls within MOA5 of the Irish Air Corps Tall Structures Paper. Proposals for structures above 45m proposed for this area should be referred to the Irish Air Corps for assessment of potential impact on flight operations.
Decommissioning	• Electricity infrastructure and supply, water infrastructure/supply and waste. Similar to construction. • Removal of c.63MW per annum of renewable energy from the national grid.
Cumulative	• Potential significant positive cumulative effect on electrical supply, with other existing operational wind farms. • No significant effect on other material assets, so not potential for significant cumulative effects.

Mitigation

10.19.95. Mitigation measures are standard, and include demarcation of OHLs, confirmatory surveys (water), liaison with utility providers and implementation of site specific measures, e.g. implementation of IAA requests listed in section 15.3.6.3

Residual Effects

10.19.96. With the implementation of mitigation measures residual effects on other material assets are not predicted to be significant (all phases). Effects on electricity supply are predicted to be long term, slight positive on national electricity supply. Should the wind farm not be repowered, there will be a slight negative long-term effect on national electricity supply.

10.19.97. **The Assessment: Direct and Indirect Effects**

10.19.98. I have examined, analysed and evaluated Chapter 15 of the EIAR. I am satisfied that the applicant understanding of the baseline environment, is comprehensive and that the key impacts in respect of likely effects on material assets as a consequence of the development have been identified. Direct and indirect effects arise from potential effects on key services e.g. water, electricity and interference with telecommunications infrastructure. Subject to the implementation

of proposed standard good practice mitigation measure, I am satisfied that no significant adverse effects will arise.

10.19.99. Parties raise specific issues in respect of wind take and effects on telecommunications (CCTV/internet), which I address below.

Wind take

10.19.100. A third-party submission (M. Ryan, Graffin, H011) raises concerns regarding wind take from adjoining lands, with T2 located c.325m from the boundary of the observer's farm, impacting on the development potential of lands for future wind energy (as there is no dwelling within 500m of the lands).

10.19.101. In response to the submission, the applicant states that T2 is over 360m west of the third-party folio, complying with WEDGs guidelines. Further, it is argued that the development has been subject to design iterations following detailed desktop and site surveys, with design optimised while minimising environmental effects. It is argued that any potential wind farm will be subject to its own multiple phase constraint studies, prior to determining suitability for wind development.

10.19.102. Section 5.13 of the WEDG states '*in general, to ensure optimal performance and to account for turbulence and wake effects, the minimum distances between wind turbines will generally be three times the rotor diameter (=3d) in the crosswind direction and seven times the rotor diameter (=7d) in the prevailing downwind direction. Bearing in mind the requirements for optimal performance, a distance of not less than two rotor blades from adjoining property boundaries will generally be acceptable, unless by written agreement of adjoining landowners to a lesser distance. that T2 is situated. However, where permission for wind energy development has been granted on an adjacent site, the principle of the minimum separation distances between turbines in crosswind and downwind directions indicated above should be respected'*.

10.19.103. No details are provided on the location of the third party's landholding. However, the red line boundary to the east of T2 is c.300m from the turbine, with the dwelling (H011), c.800m from the turbine. Rotor diameter is 163m, and, therefore, an optimal setback distance from adjoining property boundaries would be 326m. At c.326m, the setback of T2, at worst case would be at a distance of > two rotor blades from the adjoining landowner. Notwithstanding this, any wind turbine to be situated

on the land holding to the west of H011 would have to be situated >500m from the dwelling (setback for absence of effects of noise and shadow flicker WEDG 2006; minimum setback draft WEDG 2019). If this minimum distance were to be satisfied, any wind turbine to the west of H011 would be within or very close to the redline boundary of the wind farm site. I am not satisfied, therefore that the wind farm introduces, by itself, a substantial impediment to the development of lands associated with H011 for wind energy.

Telecommunications (internet/CCTV)

10.19.104. In response to submissions the applicant states that there is no anecdotal or empirical evidence to suggest operation turbines may have an effect on privately installed CCTV cameras. Further, it is stated (as per section 15.3.7.3 of the EIAR) that all four telecommunication operators have confirmed satisfaction with the proposed wind farm development, with 2RN requesting that the applicant sign a protocol in the event that effects do occur.

10.19.105. From the information on file, including the responses by the telecommunication operators, I am satisfied that there are no reasonable grounds to conclude that the operation of telecommunications infrastructure in the area of the development site will be affected by the proposed development. Notwithstanding this, standard conditions can ensure maintenance of service should any issues arise.

Conclusion

10.19.106. Having regard to the examination of environmental information in respect of material assets (other), in particular the EIAR and supplementary information provided by the applicant and the submission from observers', it is considered that the main significant direct and indirect effects on material assets (other) are potential impacts on key services e.g. water, electricity, and interference with telecommunications infrastructure during construction and operation. Subject to the implementation of proposed standard good practice mitigation measure, I am satisfied that no significant adverse effects will arise on any of these factors.

10.19.108. **Risks Associated with Major Accidents and/or Disasters**

10.19.109. **Issues Raised**

10.19.110. No issues are raised in respect of major accidents or disasters.

10.19.111. **Examination, analysis and evaluation of the EIAR**

Context

10.19.112. Chapter 16 of the EIAR deals with the risk of direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents and/or disasters as well as the potential for the proposed development to cause major accidents and/or natural disasters in relation to the environmental parameters considered in the EIAR. No limitations are identified.

Baseline

10.19.113. The baseline environment is described in section 16.3 of the EIAR. A wind farm is not a recognised source of pollution, and it is not subject to any environmental regulatory consent. The site is not regulated or connected to or close to any site under the Control of Major Accident Hazards Involving Dangerous Substances (e.g. Seveso sites). Should a major accident or natural disaster occur, the potential sources of pollution on site during all phases of the development are limited and of low environmental risk. There is also low potential for significant natural disasters, with Ireland being geologically stable with a mild temperate climate. Peat, whilst found on the site, is at depths of <1m, with most occurring at c.0.2-0.3m. The site is also relatively flat and is not a peatland site, with low/no potential for peat slides or landslides. Natural disasters are limited to issues such as flooding and fire. The risk of pollution incidents has been considered in earlier chapters of the EIAR (e.g. water, soils).

Potential Effects

10.19.114. Likely significant effects of the development, as identified in the EIAR, are summarised in Table MAND1 below.

Table MAND1: Summary of Potential Effects

Project Phase	Potential Direct, Indirect and Cumulative Effects

Do Nothing	• Existing land uses likely to remain. No risk of effects on the environment from proposed development's vulnerability to risk of major accident and/or disaster.
Construction	Potential vulnerability to disaster risks. • Critical infrastructure emergencies. Risk of delivery of turbines and infrastructure to site e.g. traffic accident or extreme weather (including effects of climate change). Risk score (consequence x likelihood) = 1 (low risk scenario). • Severe weather. Risk to construction activity on site. For example, periods of heavy rainfall including effects of climate change). Risk score (consequence x likelihood) = 2 (low risk scenario). • Flooding. Risk of flooding in the site impacting on construction phase. For example, periods of heavy rainfall (including effects of climate change). Risk score (consequence x likelihood) = 2 (low risk scenario). Potential to cause accidents and/or disasters. • Utility emergency. Risk of construction activity (grid connection and wind farm) interfering with 38kV and 110kV OHLs, impacting on local services and utilities. Risk score (consequence x likelihood) = 2 (low risk scenario). • Traffic incident. Collisions onsite and offsite with vehicles involved in construction of development. E.g. arising from driver negligence, traffic management not implemented. Risk score (consequence x likelihood) = 3 (low risk scenario). • Contamination. Increased sediment load, discharge or spillage of fuel, chemicals etc. onto soils and into watercourse/percolating to groundwater, e.g. from excavated materials, accidental fuels spillage. Risk score (consequence x likelihood) = 4 (low risk scenario). • Fire/gas. Arising from equipment or infrastructure failure, electrical problems or employee negligence. Risk score (consequence x likelihood) = 4 (low risk scenario).
Operation	Potential vulnerability to disaster risks. • Severe weather. Risk to operational activity on site, blade or turbine damage. For example, periods of heavy rainfall including effects of climate change). Risk score (consequence x likelihood) = 2 (low risk scenario). • Contamination. Discharge or spillage of fuel, chemical solvents, etc. during operational maintenance. Risk score (consequence x likelihood) = 2 (low risk scenario). Potential to cause accidents and/or disasters. • Fire/gas. Arising from equipment or infrastructure failure, electrical problems or employee negligence. Risk score (consequence x likelihood) = 4 (low risk scenario). • Collapse/damage to structures. Earthquake, extreme weather event, vehicle collisions. Risk score (consequence x likelihood) = 1 (low risk scenario). • Traffic incident. Collisions onsite and offsite with vehicles involved in construction of development. Risk score (consequence x likelihood) = 2 (low risk scenario).
Decommissioning	• As per construction in respect of severe weather, flooding of site, traffic incident and contamination.

Cumulative	• No potential for significant effects, due to the low risk associated with the proposed development and a review of the nature of the surrounding land uses and projects existing or intended in the surrounding area.

Mitigation

10.19.115. Mitigation measures are set out in section 16.4.3.1 of the EIAR. Measures are targeted at key areas of risk e.g. contamination during construction, fire/explosion and include the mitigation measures set out in respect of the different environmental topics, included in the CEMP and arrangements for monitoring of risk during all phases of the development.

Residual Effects

10.19.116. With the implementation of mitigation measures residual effects associated with the construction, operation and decommissioning of the development, are not considered to be significant.

10.19.117. **The Assessment: Direct and Indirect Effects**

10.19.118. I have examined, analysed and evaluated Chapter 16 of the EIAR. I am satisfied that the applicant has presented a very reasonable assessment of the likely risk of direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents and/or disasters as well as the potential for the proposed development to cause major accidents and/or natural disasters. With the implementation of the proposed mitigation measures, I am satisfied that there is no potential for significant direct, indirect or cumulative environmental effects as a result of vulnerability to the risk of accident and/or natural disaster.

10.19.119. **Interactions**

10.19.120. **Issues Raised**

10.19.121. No issues have been raised in the course of the planning application in respect of significant environmental effects arising from interactions of impacts.

10.19.122. **Examination, analysis and evaluation of the EIAR**

Context

10.19.123. Chapter 17 of the EIAR deals with impact interactions. The assessment methodology includes Table 17-1, an interactions matrix which identifies potential interacting impacts.

Baseline

10.19.124. The baseline environment comprises environmental context for the development as described in the individual chapters of the EIAR.

Potential Effects

10.19.125. Likely significant effects of the development, as identified in the EIAR, are summarised in Table I1 below.

Table I1: Summary of Potential Effects

Project Phase	**Potential Direct, Indirect and Cumulative Effects**
Do Nothing	• None.
Construction, Operation and Decommissioning	• Population and human health. Interactions are greatest for people living, working and travelling in the area of the site, with potential interactions from the contamination of soils, water, reduction in air quality and climate (construction), improvement in air quality and climate (long term), noise during construction, changes to landscape and visual effects (short and long term), increase in traffic on local roads and a potential impact on utilities (construction and operation). No significant effect identified for any interaction. • Biodiversity. Interactions arise from loss of habitat/disturbance during construction, provision of enhanced habitat (long term, Eastwood River), potential for water pollution (indirect effects), reduction in air quality and climate (short term), improvement in air quality/climate (long term), bat collision risk (long term). No significant effect identified for any interaction. • Ornithology. Key interactions arise from the risk of water pollution (indirect effects), loss of habitat/disturbance, reduction in air quality and climate (short term), improvement in air quality/climate (long term) and collision risk (long term). No significant effect identified for any interaction. • Land, soils and geology. The movement and removal of soils has potential for negative effects on water quality, cultural heritage, local landscape and air quality. No significant effect identified for any interaction. • Air quality. The movement of vehicles/use of plant to and within the site has potential to impact negatively on-air quality. No significant effect identified for any interaction. • Climate. The movement of vehicles/use of plant to and within the site has potential to impact negatively GHG emissions. Operational effects will be positive with displacement of c.1.8Mtonnes of carbon dioxide over the life of the wind farm. No significant effect identified for any interaction. • Landscape and visual. Changes to landscape and visual effects of the development has the potential to change the setting of recorded sites and monuments. No significant effect identified for any interaction.

	• Vulnerability to natural disasters. The risk of accidents during construction, operation and decommissioning by operational failure and/or natural hazards has the potential for adverse effects on all environmental parameters. However, risk of accident/natural disaster has been assessed as low. No significant effect identified for any interaction.
Cumulative	• Not addressed in the EIAR. However, no significant interactions identified, or therefore for potential cumulative effects.

Mitigation

10.19.126. The EIAR refers to the mitigation measures are set out for each environmental parameter and set out in the Schedule of Mitigation and Monitoring Measures (Chapter 18, EIAR) and in the CEMP (Appendix 4-3). It is noted that Table 18-1 provides mitigation measures for the pre-commencement, construction, operational and decommissioning phases of the development and Table 18-2 the monitoring measures for each phase of the development.

Residual Effects

10.19.127. The EIAR states that where any potential interactive negative impacts have been identified, these are addressed by the mitigation measures included in the relevant sections of the EIAR, with residual effects as presented in each relevant chapter.

10.19.128. **The Assessment: Direct and Indirect Effects**

10.19.129. I have examined, analysed and evaluated Chapter 17 of the EIAR, and the associated chapters of the EIAR. I am satisfied that the applicant has identified the key interactions arising for the subject development. Similarly, I would conclude that the greatest number of impact interactions (direct and indirect) arise for people, biodiversity, ornithology, and risks to water quality, for all phases of the development with greatest effects during construction. However, having regard to the detailed assessment of likely effects on these parameters, as considered in this report, and with the application of the proposed mitigation measures I am satisfied that no significant adverse environmental effects will arise by virtue of the interaction of impacts. In the longer term, there will be positive interactions arising from the restoration of a section of Eastwood River and the provision of energy from a renewable source.

10.20. **Reasoned Conclusion**

10.20.1. Having regard to the examination of environmental information set out above, to the EIAR and other information provided by the developer, and to the submissions from the planning authority, prescribed bodies and third in the course of the application, it is considered that the main significant direct and indirect effects of the proposed development on the environment are as follows:

- *Population and human health* – Short term direct and indirect negative effects arising from the construction phase on residential amenity and use of the public road, and longer-term the potential for noise, shadow flicker and landscape and visual effects, in particular for residents in proximity to the wind farm site, and with open views of it. These effects will be mitigated by the distance of the dwellings from the construction site, implementation of standard good construction practices, management of construction traffic, distance of turbines from residential dwellings, intervening vegetation, and controlled operation of wind turbines in accordance with defined parameters. However, local landscape and visual impacts will remain. Short term positive effects will arise for the local economy during construction and longer-term positive effects for the local community with the community benefit fund.
- *Biodiversity* – Long term loss of broadleaved woodland, treelines and hedgerows arising from the footprint of the development, the potential for increased loading and pollution of waterbodies during construction and operation, with the risk of adverse effects on downstream water quality dependent habitats and species, the potential for significant direct and indirect effects on mobile species during construction and the risk of collision by bird and bat species during operation. Further, it is considered that these impacts will be mitigated by the application of best practice construction methodologies, as set out in the project documentation, the application of proposed site- and species-specific mitigation measures and with the implementation of the proposed Biodiversity Management and Enhancement Plan.
- *Land, soil, water, air and climate* – The potential for direct and indirect effects on water quality, particularly during construction, alterations to surface water

flow paths, changes to hydromorphology, increased risk of flooding, and localised effects on air quality (noise and dust). In the longer term there will be an increase in the noise environment of the site with the operation of the wind turbines, and positive effects on climate and air quality. These impacts will be mitigated by the design of the proposed development, distance from sensitive receptors, the use of standard good construction practices and operational controls, which have been demonstrated to effective in preventing adverse effects.

- *Archaeology, cultural heritage, landscape, and material assets* – Potential direct impacts on unknown features of archaeology, substantial changes to the landscape character of the development site and substantial visual effects in the immediate area or the site, increased road traffic in the vicinity of the site, and interruption to telecommunications/utilities. These impacts will be mitigated by archaeological monitoring of groundworks, revegetation of the site, the landscape context for the development, the management of traffic in line with the proposed Traffic Management Plan and layout of the development to avoid telecommunications and other infrastructure, preconstruction survey work and liaison with utility/telecom providers. However, local landscape and visual effects will remain.

10.20.2. Having regard to the foregoing, I am satisfied that the proposed development would not have any unacceptable significant direct, indirect, or cumulative effects on the environment.

11.0

11.0 Appropriate Assessment

11.1. Introduction

11.1.1. The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, sections 177U (screening) and 177V (appropriate assessment) of the Planning and Development Act 2000 (as amended) are considered fully in this section.

Screening

11.2. Background to the Application

11.2.1. The applicant has submitted an Appropriate Assessment Screening Report in Volume III of the application documents as part of the Natura Impact Statement (NIS). It has been prepared having regard to national and European guidelines, in respect of appropriate assessment. The report refers to the desk and field surveys carried out of the development site (to establish a baseline environment for the site) and reproduces certain chapters of the EIAR in Appendices (A1 Description of the development and construction methodology, A2 Hydrology and Hydrogeology, A3 Aquatic Baseline Report, A4 CEMP, and A5 Cumulative Assessment Long List). This environmental context informs the appropriate assessment screening and subsequent NIS. The screening report identifies European sites likely to be in the zone of influence of the development having regard to the nature, scale and form of the development, the source pathway target approach and catchment mapping, SNH guidelines on 'Assessing Connectivity with Special Protection Areas' and the potential for cumulative effects. On a precautionary basis, identifies the potential for significant effects on the following European site, Lower River Suir SAC (site code 002137).

11.2.2. Having reviewed the Screening Report, related documents, and submissions, I am satisfied that the information presented in Screening Report allows for a complete examination and identification of any potential significant effects of the development, alone, or in combination with other plans and projects on European sites.

11.3. Screening for Appropriate Assessment – Test of Likely Significant Effects

11.3.1. The project is not directly connected with or necessary to the management of a European Site and therefore it needs to be determined if the development is likely to

have significant effects on a European site(s). The proposed development is examined in relation to any possible interaction with European sites designated Special Conservation Areas (SAC) and Special Protection Areas (SPA) to assess whether it may give rise to significant effects on any European Site.

11.4. Brief Description of the Proposed Development

11.4.1. The applicant provides a description of the proposed development in section 2 of the NIS and in detail in Appendix 1 (repeat of Chapter 4 of the EIAR). It is also described in section 4.0 of this report. In summary it comprises the construction of 9 no. wind turbines, with an overall tip height of 185m, generating capacity of 63MW/pa over an operational life of 30 years. Associated infrastructure includes meteorological mast, associated underground electrical and communication cabling, temporary construction compound and security cabin, upgrading/provision of access tracks, roads and entrances, junction accommodation works (J22, M7), borrow pit, spoil management areas, arrangements for site drainage and construction compounds.

11.4.2. Ancillary tree felling and hedgerow removal will be required to enable the development. As part of the Biodiversity Management and Enhancement Plan, replacement woodland and hedgerow planting will be carried out and a section of the Eastwood River will be restored. Construction will be managed in accordance with a CEMP (A4, NIS). It includes details in respect of drainage, spoil management, waste management, mitigation, and monitoring measures.

11.4.3. The development will be connected to the transmission system via a 110kV substation and supporting infrastructure (by separate application to the Board). The grid connection development includes one no. permanent 110kV substation compound, temporary construction compound, 2km underground 110kV electrical cabling route (including joint bays and watercourse crossings) to run through the L-7039 road (870m) and new track through agricultural land (1.2km), and 2 no. new end masts to connect to the Ikerrin to Thurles 110kV OHL (Figures 4-23 to 4-30, EIAR).

11.4.4. The proposed development includes the construction of four river crossings (Figure 4-1), two as part of the wind farm site (clearspan bridge over Eastwood River east of T6; HDD drilling to install cabling under existing bridge on L-70391) and two as part

of the grid connection (HDD under L7039 as it crosses Clonmore stream; clearspan crossing of Strogue watercourse in agricultural land). In addition, a number of culverts are proposed at field drainage crossings.

11.4.5. The development site comprises largely improved and species poor agricultural grassland, with areas of wet grassland, conifer plantation, mixed broadleaved woodland, and hedgerows and treelines throughout the site. Depositing/lowland rivers, flow through the site generally in a southerly, south westerly or south easterly direction, comprising Shanakil River, Suir River, Farranacahill River, Eastwood River and Clonmore River. Ultimately discharging to these are numerous drainage ditches throughout the site, associated with agricultural fields, hedgerows and treelines. Many of the drainage ditches, associated with agricultural grassland, have little or no instream vegetation. Biological water quality of the site, (Appendix 3, NIS) is generally poor. Aquatic habitats are identified as of local importance only due to the poor hydromorphology of waterbodies (deepened and straightened). A non-calcareous spring was identified c.11m to the southeast of a proposed access road to the north of the site (Figure 3-1, Habitat Map, NIS). Otter was observed within the site, but no breeding or couches were identified within or 150m downstream of the site.

11.4.6. Taking account of the characteristics of the proposed development in terms of its location and the scale of works, the following issues are considered for examination in terms of implications for likely significant effects on European sites:

- Habitat loss/fragmentation with effects on mobile QI species.
- Habitat degradation and disturbance of mobile Qi species.
- Potential for adverse effects on water quality dependent mobile species of conservation interest habitats or downstream European sites.

11.5. Submissions and Observations

11.5.1. No specific issues are raised regarding effects on European sites.

European sites

11.5.2. The development site is physically removed from European sites. The nearest Natura 2000 site lies c.5km to west of the site and comprises the Devil's Bit Mountain SAC (site code 000934). Other sites occur in the wider area and are

considered below for possible connection to the development site. Hydrologically, the site lies within the Suir sub catchment Suir_SC010. The only European site lying within the same sub catchment is Devil' Bit Mountain SAC lies, upstream of the site. The Suir sub-catchment, Suir_SC010, forms part of the larger Suir catchment (WFD Catchment 16). Within this larger catchment, downstream of the development site lies the Lower River Suir SAC (site code 002137).

11.5.3. A summary of the European sites within a possible zone of influence of the proposed development is presented below, Table AA1 (see also Figure 4-1, NIS). Where a possible connection between the development and a European site has been identified, these sites are examined in more detail. Reference has been made to the conservation objectives, site synopsis and statutory instruments of the European sites referred to.

Table AA1. Summary Table of European Sites within a possible zone of influence of the proposed development.

European Site (code) **Distance from development (km)**	**List of QI/SCI**	**Connections (SPR)**	**Considered further in screening (Y/N)**
Kilduff, Devilsbit Mountain SAC [000934] Distance: 5.3km	European dry heaths [4030] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]	No potential for direct effects, as development site is substantially removed from SAC. SAC lies in the same sub-catchment of the development site (Suir_SC_010) but is upstream of the development site and no other pathway exists to connect the SAC and the development site.	No.
Galmoy Fen SAC [001858] Distance: 13.2km	Alkaline fens [7230]	No potential for direct effects, as development site is substantially removed from SAC. The SAC is within a separate hydrological catchment and groundwater body to the SAC and no other pathway exists to connect the SAC and the development site.	No.
Lower River Suir SAC [002137]	Atlantic salt meadows (Glauco-	No potential for direct effects, as development site is substantially removed from SAC.	Yes.

Distance: 13.2km (23.1km downstream of EIAR site boundary).	Puccinellietalia maritimae) [1330] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Taxus baccata woods of the British Isles [91J0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaite Shad) [1103]	Development site is connected to the SAC by the River Suir which drains the development site and which discharges into the SAC c.23.1km downstream. Taking a precautionary approach, a potential for likely significant effect was identified via deterioration of water quality associated with the proposed development. Potential also for a significant effect (ex-situ disturbance) to the QI species Otter during the construction phase and other mobile fish species.	

	Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]		
Slieve Bloom Mountains to Silvermines SPA [004160] Distance: 13.4km NE	Hen Harrier (Circus cyaneus) [A082]	No potential for direct effects, as development site is substantially removed from SPA. The Site is located 13.4km from the SPA. The Site is outside the core foraging distance of hen harrier indicated in NatureScot 2016 Guidelines – SNH, Assessing Connectivity with SPAs (core range of 2km, maximum range of 10km).	No.
Slievefelim to Silvermines Mountains SPA [004165] Distance: 19km SW	Hen Harrier (Circus cyaneus) [A082]	No potential for direct effects, as development site is substantially removed from SPA. The Site is located 19km from the SPA. The Site is outside the core foraging distance of hen harrier indicated in NatureScot 2016 Guidelines – SNH, Assessing Connectivity with SPAs (core range of 2km, maximum range of 10km).	No.
River Nore SPA [004233] Distance: 14.3km	Kingfisher (Alcedo atthis) [A229]	No potential for direct effects, as development site is substantially removed from SPA. There is no direct hydrological connectivity with the SPA and no pathway for indirect effects on its SCI. The SPA is located within a separate sub catchment and groundwater body, therefore there will be no indirect effects on the SPA via surface or groundwater deterioration.	No.

11.5.4. Having regard to the foregoing, I am satisfied that there are elements of the proposed development, which alone and in combination with other development and plans in the area of the site, may give rise to significant effects on the Lower River Suir SAC European site, by virtue of downstream effects (water pollution) and the potential for effects on mobile species of conservation interest.

11.6. Screening Determination

11.6.1. The proposed development was considered in light of the requirements of Section 177U of the Planning and Development Act 2000 as amended. Having carried out Screening for Appropriate Assessment of the project, it has been concluded that the project individually (or in combination with other plans or projects) could have a significant effect on the Lower River Suir SAC [002137], in view of the site's Conservation Objectives, and Appropriate Assessment is therefore required.

11.6.2. Other European sites in the wider area of the development site can be excluded on the grounds that the development would not be likely to give rise to significant effects on these due to distance, lack of connectivity, including the location of the development site outside of the maximum range of for mobile SCI.

11.7. The Natura Impact Statement (NIS)

11.7.1. The applicant provides a NIS for the proposed wind farm, 'Borrisbeg Renewable Energy Development, Natura Impact Statement' (Volume III). The NIS refers to the individual qualifying interests of the Lower River Suir SAC and considers the potential for indirect effects, e.g. by of deterioration of water quality or ex situ impacts by way of disturbance. The NIS provides an assessment of potential effects for each phase (construction, operation, and decommissioning) having regard to:

a) The qualifying interests of the European site, Conservation Objectives for the QI and the potential, therefore for adverse effects (Table 5-1),
b) The site-specific pressures and threats,
c) QI specific information,
d) Hydrological desk study (local hydrology, hydrogeology, and water quality), and
e) Proposed mitigation measures.

11.7.2. The NIS concludes that, in view of best scientific knowledge and on the basis of objective information, the proposed project will not adversely affect the Qualifying Interests associated with the screened in European Site, Lower River Suir SAC [002137]. The conclusion is drawn on the basis that potential pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

11.7.3. Having reviewed the documents, submissions, and consultations, I am satisfied that the information allows for a complete assessment of any adverse effects of the development, on the conservation objectives of the Lower River Suir SAC [002137], alone, or in combination with other plans and projects:

11.8. Appropriate Assessment of Implications of the Proposed Development

11.8.1. The following is a summary of the objective scientific assessment of the implications of the project on the qualifying interest features of the European sites using the best scientific knowledge in the field. All aspects of the project which could result in significant effects are assessed and mitigation measures designed to avoid or reduce any adverse effects are considered and assessed. The assessment has regard to government and EU guidelines on appropriate assessment (DoEHLG, 2009, AA of Plans and Projects in Ireland; EC, 2002, Assessment of plans and projects significantly affecting Natura 2000 sites; EC, 2018, Managing Natura 2000 sites).

11.9. European Sites.

11.9.1. A description of the Lower River Suir SAC [002137], its conservation objectives and qualifying interests are set out in the NIS and summarised in Table AA2 below as part of my assessment. I have also examined the attributes and targets for each QI, the Natura 2000 data forms and supporting documents as relevant available on the NPWS website (attributes and targets for each Qi are set out in full in the NIS in Tables 5-3 to 5-12).

11.10. Aspects of the Proposed Development.

11.10.1. The proposed is described, in summary, in the Screening section of this report. The main aspects of the proposed development that could adversely affect the conservation objectives of the European site are:

- Taking a precautionary approach, a potential for likely significant effect was identified via deterioration of water quality associated with the proposed development.
- Potential also for a significant effect (ex-situ disturbance) to the QI species Otter during the construction phase and other mobile fish species.

11.10.2. The potential for these effects to impact on the conservation interests of the Lower River Suir SAC is examined in Table AA2 below for each of the QIs. In combination effects, which may arise from other plans and projects, existing or proposed, in the area of the site, for example, with effects on water quality, are also considered.

Table AA2 Appropriate Assessment Summary Matrix. Lower River Suir SAC [002137].

Lower Rive Suir SAC [002137].

Key issues that could give rise to significant effects –

- No direct effects. Footprint outside of designated site (development site is c.23.1km upstream of SAC).
- Deterioration of water quality with indirect effects on water quality dependent habitats and species of conservation interest.
- Ex situ effects by way of disturbance on mobile species of conservation interest.

Site specific pressures and threats include fertilisation, urbanised areas, human habitation, discharges, pollution to surface waters, dykes and flooding defence in inland water systems, cultivation, forestry, invasive non-native species, landfill, land reclamation and drying out.

		Summary of Appropriate Assessment			
Qualifying Interest Feature	**Conservation Objectives Targets and Attributes (see NPWS Conservation Objectives for the site).**	**Potential Adverse Effects**	**Mitigation Measures (section 6 NIS)**	**In-combination effects**	**Can adverse effects on integrity be excluded**
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	To restore the favourable conservation condition of the habitat defined by habitat area increasing or stable, no decline in habitat distribution, maintain	Map 3 of NPWS SSCO indicates location of habitat to be significantly removed from the development. Further, the habitat is a coastal one and will be restricted to upstream limit of Upper Suir Estuary transitional	N/A	No (based on no potential for adverse effects).	Yes.

	physical and vegetation structure and vegetation composition,	waterbody, located c.1.2km north of Carrick on Suir and >120km downstream of development site. Therefore, due to the nature and scale of the Proposed Project, the coastal nature of the QI habitat and the assimilative capacity of the intervening waterbodies there is no potential for adverse effect on the QI habitat.			
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	To restore the favourable conservation condition defined by habitat area (stable or increasing), habitat distribution (no decline), woodland sized (area stable or increasing), woodland structure (maintain with defined parameters), vegetation composition (no decline, maintain typical species).	The SAC is located 13.2km by land from the development site. Due to the terrestrial nature of this QI habitat, and the intervening distance between the SAC and the development site, there is no source-pathway-receptor connectivity for adverse effects on the QI habitat.	N/A	No (based on no potential for adverse effects).	Yes.

Taxus baccata woods of the British Isles [91J0]	To restore the favourable conservation condition defined by habitat area (stable or increasing), habitat distribution (no decline), woodland sized (area stable or increasing), woodland structure (maintain with defined parameters), vegetation composition (no decline, maintain typical species).	Habitat has not been mapped in detail for Lower River Suir SAC and thus the total area of the qualifying habitat is unknown. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'bad' and conservation trend 'stable'. Due to the terrestrial nature of this QI habitat, and the intervening distance between the SAC and the development site, the NIS considers that there is no source-pathway-receptor chain for adverse effect on the QI habitat.	N/A	No (based on no potential for adverse effects).	Yes.
Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	To restore the favourable conservation condition defined by distribution (10.4km Clodiagh), population size (10,000 adult mussels), population structure (targets for recruitment and	Map 6 of the SSCO indicates that the designated catchment for Margaritifera margaritifera within the SAC, the Clodiagh catchment, is located within a different hydrological sub-catchment to the development site and is located upstream of the River Suir. Therefore, there is no	N/A	No (based on no potential for adverse effects).	Yes.

	mortality), suitable habitat (restore extent and condition), water quality (defined parameters), substratum quality (targets for microalgae, macrophytes, sediment quality and oxygen availability), hydrological regime (maintain).	downstream hydrological connectivity from the River Suir to the Clodiagh catchment and as such no source pathway receptor model for adverse effect on the QI species.			
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	To maintain the favourable conservation condition of the habitat defined by habitat area (stable or increasing), habitat distribution (no decline), hydrological regime and substratum composition (to maintain), water quality (to maintain appropriate to support natural structure and functioning of habitat), typical	Little is known about the distribution of the habitat and its sub-types within the SAC. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'inadequate' and conservation trend 'deteriorating'. The SAC is approx. 23.1km hydrologically downstream of the development site. Taking a precautionary approach, the NIS considers there is potential for	Multiple mitigation measures proposed to protect water quality, including: *Construction* • Mitigation by design (50m buffer zones from streams/rivers, including for forestry clearance, no instream works. • Detailed and comprehensive drainage plan to prevent	NIS considers the potential for cumulative effects arising from permitted or planned projects in the area of the site (Appendix 5, NIS), wind energy developments (operational and proposed) within 20km and relevant land use plans (Tipperary CDP 2022-2028; National	Yes.

	species, floodplain connectivity and fringing habitat (maintain)	impacts to this QI habitat where it occurs in the SAC as a result of construction activities associated with the Proposed Project.	deterioration in water quality, with standard good practice measures which are effective at preventing pollution of surface and ground water. • Adherence to industry best practice methods for clear felling. • Water quality monitoring before, during and after works as per CEMP. • Wastewater to be disposed off site. • Near stream works in accordance with IFI guidelines. • Specific quality control measures for piling works. • Restoration of Eastwood River 'in the dry' (e.g.	Biodiversity Action Plan 2017-2021; Draft 4th NBAP 2023-2027 and Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031. Taking into account no significant residual effects are predicted, with mitigation measures, no adverse cumulative effects on key ecological receptors are anticipated. The conclusion reached is reasonable based on the scientific information presented (in respect of likely effects), proposed mitigation measures	
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	To maintain the favourable conservation condition of the habitat defined by habitat area (stable or increasing), habitat distribution (no decline), hydromorphological regime (maintain), vegetation composition (maintain), vegetation structure and physical structure (maintain within defined parameters).	SSCO state that the habitat has not been mapped in detail and the total area of the QI is unknown. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'bad' and conservation trend 'deteriorating'. The SAC is approx. 23.1km hydrologically downstream of the Site. Taking a precautionary approach, the NIS considers there is potential for impacts to this QI habitat where it occurs in the SAC as a result of construction activities associated with the proposed development.			Yes.
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae,	To restore the favourable conservation condition defined by habitat area (stable or	Site synopsis indicates the habitat is declining in Europe as a result of drainage and reclamation. Best examples of this woodland			Yes.

Salicion albae) [91E0]	increasing), habitat distribution (no decline), woodland sized (area stable or increasing), woodland structure (maintain with defined parameters), vegetation composition (no decline, maintain typical species).	are on the islands below Carrick on Suir at Fiddown Island. Area of woodland surveyed in the SAC is c.32.9ha, however further unsurveyed areas are present within the SAC. Mapped areas are indicated in Map 5, SSCOs. Downstream of and substantially removed from development site. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'bad' and conservation trend 'deteriorating'. The SAC is approx. 23.1km hydrologically downstream of the Site. Taking a precautionary approach, there is potential for impacts to this QI habitat where it occurs in the SAC, which is dependent on aquatic inputs, as a result of construction activities associated with the proposed development.	stream diversion, with maintenance of flow. *Operation* • Increase in daily runoff from hardstands/ roads conservatively assessed at 0.7% in the average daily/monthly volume of runoff compared to baseline (imperceptible impact). Notwithstanding this, operational drainage system to manage and regulate flows (for contaminants, volume of flow and rate of discharge). *Decommissioning* • Similar to construction phase. To be addressed in decommissioning plan (Appendix 4-4, EIAR)	which are standard and effective good practices and the limited concurrent development occurring within the river sub-basins in which the site is situated.	

Austropotamobius pallipes (White-clawed Crayfish) [1092]	To maintain the favourable conservation condition of the species defined by distribution (no reduction from baseline), population structure (occurrence), negative indicator species, disease (no alien crayfish, no instances of disease), water quality (at least Q3-4), habitat quality (no reduction in heterogeneity/quality).	The species occurs extensively on the River Suir and many of its tributaries (Map 7, SSCOs). The SAC is approx. 23.1km hydrologically downstream of the proposed development site. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'bad' and conservation trend 'deteriorating'. Taking a precautionary approach, the NIS identifies potential for impacts to this QI species via water quality deterioration associated with construction activities for the proposed development.	which will be updated at end of life of wind farm, in accordance with SNH guidelines.		Yes.
Petromyzon marinus (Sea Lamprey) [1095]	To restore the favourable conservation condition of the species as defined by distribution (percentage of river accessible), population structure of	Artificial barriers can block or cause difficulties to lamprey's upstream migration. IFI survey point to little success of sea lamprey adults passing weirs in Clonmel in Lower River Suir SAC.			Yes.

	juveniles (number of age/size groups), juvenile density in fine sediment (defined), extent and distribution of spawning habitat and availability of juvenile habitat (number of positive sites in defined locations).	Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'bad' and conservation trend 'stable'. Taking a precautionary approach the NIS identifies potential for impacts to this QI species via water quality deterioration associated with construction activities for the proposed development.			
Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099]	To restore the favourable conservation condition of these species as defined by distribution (percentage of river accessible), population structure of juveniles (number of age/size groups), juvenile density in fine sediment (defined), extent and distribution of spawning habitat and availability of juvenile	SSCO for Brook and River Lamprey state that artificial barriers can block or cause difficulties to lampreys' migration both up- and downstream, thereby possibly limiting species to specific stretches, restricting access to spawning areas and creating genetically isolated populations. Article 17 Report (NPWS 2019) identifies overall conservation status for Brook Lamprey as			Yes.

	habitat (number of positive sites in defined locations).	'favourable' and conservation 'stable' and the overall conservation status for River Lamprey as 'unknown'. Taking a precautionary approach the NIS identifies potential for impacts to these QI species via water quality deterioration associated with construction activities for the proposed development.			
Alosa fallax fallax (Twaite Shad) [1103]	To restore the favourable conservation condition of the species defined by distribution (percentage of river accessible), population structure (age classes), extend and distribution of spawning habitat (no decline), water quality (milligrams of oxygen per litre), spawning	SSCO indicate that in some catchments, artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'bad' and conservation trend 'stable'. Taking a precautionary approach the NIS identifies potential for impacts to this QI species via			Yes.

	habitat quality (maintain).	water quality deterioration associated with construction activities for the proposed development.			
Salmo salar (Salmon) [1106]	To restore the favourable conservation condition of the species defined by distribution (percentage of river accessible), adult spawning fish (number), salmon fry abundance (number), out migrating smolt (number, no significant decline), number and distribution of redds (no decline), water quality (at least Q4).	Again, SSCO state that artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'inadequate' and conservation trend 'stable'. Taking a precautionary approach the NIS identifies potential for impacts to this QI species via water quality deterioration associated with construction activities for the proposed development.			Yes.
Lutra lutra (Otter) [1355]	To maintain the favourable conservation condition of the species	SSCOs estimated current range in the SAC is 93.6% with terrestrial extent to include 10m	*Construction*		Yes.

	defined by distribution (no significant decline), extent of terrestrial, marine and freshwater (river) habitat, couching sites and holts, fish biomass availability, barriers to connectivity (no significant decline).	critical buffer along river banks (above HWM), 712.27ha of marine habitat (based on otters foraging within 80m of shoreline) and freshwater river habitat of 382.31km (calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters). Article 17 Report (NPWS 2019) identifies overall conservation status for the species is 'favourable' and conservation trend 'improving'. Taking a precautionary approach, the NIS identifies potential for impacts to this QI species via water quality deterioration associated with construction activities for the proposed development, potentially affecting fish biomass availability.	• Major infrastructure avoids watercourses. • No otter holts found within site. • No instream works required (watercourse crossings by clear span bridge or HHD). • Pre-commencement survey for presence of otter e.g. holt. Derogation licence to be sought if required. No works within 150m of holt (breeding females/cubs present). No wheeled tracked vehicles within 20m of active, no breeding holt, no light work within 15m of same (unless under licence). *Operation* • No additional habitat loss or deterioration, no		

			significant increase in anthropogenic activity due to scale and location of development. *Decommissioning* • As per construction, with updated Decommissioning Plan.		
Overall conclusion: Integrity Test. Following the implementation of mitigation, the construction, operation and decommissioning of the proposed development will not adversely affect the integrity of this European site and no reasonable doubt remains as to the absence of such effects.					

11.11. Integrity Test

11.11.1. Following the appropriate assessment and the consideration of mitigation measures, including:

- Measures that are embedded by virtue of the design of the development,
- The detailed arrangements for the management of surface water during all phases of the development, to minimise the potential for water pollution or significant effects on surface water flows (volume and rate of discharge), and the proposed arrangements for monitoring of water quality, as set out in the project description (Chapter 4, EIAR and Appendix I, NIS) and CEMP,
- The standard good practice nature of the proposed mitigation measures and the efficacy of these to prevent water pollution and for managing flows.
- The absence of otter holts or couches on the development site and the proposals for pre-construction survey of the site and measures to prevent impacts on the species should pre-construction survey identify the presence of holts on the site.
- The absence of potential for cumulative effects with other policies, plans or projects in the area of the site,

11.11.2. I am able to ascertain with confidence that the project would not adversely affect the integrity of in view of the Conservation Objectives of the Lower River Suir SAC [site code 002137]. This conclusion has been based on a complete assessment of all implications of the project alone and in combination with plans and projects.

11.12. Appropriate Assessment Conclusion

11.12.1. The proposed development has been considered in light of the assessment requirements of Sections 177U and 177V of the Planning and Development Act 2000 as amended. Having carried out screening for Appropriate Assessment of the project, it was concluded that it may have a significant effect on the following European site Lower River Suir SAC [site code 002137]

11.12.2. Consequently, an Appropriate Assessment was required of the implications of the project on the qualifying features of this site, in light of their conservation objectives.

11.12.3. Following an Appropriate Assessment, it has been ascertained that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of the European sites, listed above, or any other European site, in view of the site's Conservation Objectives. This conclusion is based on a complete assessment of all aspects of the proposed project and there is no reasonable doubt as to the absence of adverse effects.

12.0 **Recommendation**

12.1. I recommend that permission for the development be granted subject to conditions.

13.0 **Reasons and Considerations**

(a) National policy with regard to the development of alternative and indigenous energy sources and the minimisation of emissions from greenhouse gases

(b) the provisions of the Wind Energy Development Guidelines – Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June 2006,

(c) the policies set out in the Regional Spatial and Economic Strategy of the Southern Region 2020,

(d) the policies of the planning authority Tipperary County Development Plan 2022,

(e) the character of the landscape in the area of the site and in the wider area of the site,

(g) the pattern of the existing and permitted development in the area,

(h) The distance between the turbines and surrounding dwellings and other sensitive receptors from the proposed development,

(i) The environmental impact assessment report submitted,

(j) The Natura Impact Statement submitted,

(k) The submissions and observations made in connection with the planning application,

(l) The report of the Inspector.

Environmental Impact Assessment

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

- The nature, scale and extent of the proposed development,

- The environmental impact assessment report and associated documentation submitted in support of the application,
- The submissions from the Planning Authority, prescribed bodies and observers, and
- The Inspector's report.

The Board considered that the environmental impact assessment report, supported by the documentation submitted by the applicant, adequately considers alternatives to the proposed development and identifies and describes adequately the direct, indirect, secondary and cumulative effects of the proposed development on the environment.

The Board agreed with the examination, set out in the Inspector's report, of the information contained in the environmental impact assessment report and associated documentation submitted by the applicant and submissions made in the course of the application.

The Board considered, and agreed with the Inspectors reasoned conclusions, that the main significant direct and indirect effects of the proposed development on the environment are as follows:

- *Population and human health* – Short term direct and indirect negative effects arising from the construction phase on residential amenity and use of the public road, and longer-term the potential for noise, shadow flicker and landscape and visual effects, in particular for residents in proximity to the wind farm site, and with open views of it. These effects will be mitigated by the distance of the dwellings from the construction site, implementation of standard good construction practices, management of construction traffic, distance of turbines from residential dwellings, intervening vegetation, and controlled operation of wind turbines in accordance with defined parameters. However, local landscape and visual impacts will remain. Short term positive effects will arise for the local economy during construction and longer-term positive effects for the local community with the community benefit fund.
- *Biodiversity* – Long term loss of broadleaved woodland, treelines and hedgerows arising from the footprint of the development, the potential for increased loading and pollution of waterbodies during construction and

operation, with the risk of adverse effects on downstream water quality dependent habitats and species, the potential for significant direct and indirect effects on mobile species during construction and the risk of collision by bird and bat species during operation. Further, it is considered that these impacts will be mitigated by the application of best practice construction methodologies, as set out in the project documentation, the application of proposed site- and species-specific mitigation measures and with the implementation of the proposed Biodiversity Management and Enhancement Plan.

- *Land, soil, water, air and climate* – The potential for direct and indirect effects on water quality, particularly during construction, alterations to surface water flow paths, changes to hydromorphology, increased risk of flooding, and localised effects on air quality (noise and dust). In the longer term there will be an increase in the noise environment of the site with the operation of the wind turbines, and positive effects on climate and air quality. These impacts will be mitigated by the design of the proposed development, distance from sensitive receptors, the use of standard good construction practices and operational controls, which have been demonstrated to effective in preventing adverse effects.
- *Archaeology, cultural heritage, landscape, and material assets* – Potential direct impacts on unknown features of archaeology, substantial changes to the landscape character of the development site and substantial visual effects in the immediate area or the site, increased road traffic in the vicinity of the site, and interruption to telecommunications/utilities. These impacts will be mitigated by archaeological geophysical survey and archaeological monitoring of groundworks, revegetation of the site, the landscape context for the development, the management of traffic in line with the proposed Traffic Management Plan and layout of the development to avoid telecommunications and other infrastructure, preconstruction survey work and liaison with utility/telecom providers. However, local landscape and visual effects will remain.

Appropriate Assessment - Stage 1

The Board considered the Screening Report for Appropriate Assessment, the Natura Impact Statement and all the other relevant submissions and carried out both an appropriate assessment screening exercise and an appropriate assessment in relation to the potential effects of the proposed development on designated European Sites. The Board agreed with and adopted the screening assessment and conclusion carried out in the Inspector's report that the following European site in respect of which the proposed development has the potential to have a significant effect is the Lower River Suir SAC [002137].

Appropriate Assessment – Stage 2

The Board considered the Natura Impact Statement and associated documentation submitted with the application, the mitigation measures contained therein, the submissions and observations on file, and the Inspector's assessment. The Board completed an appropriate assessment of the implications of the proposed development for the European site for which potential to have a significant effect had been identified, in view of the site's conservation objectives. The Board considered that the information before it was adequate to allow the carrying out of an appropriate assessment. In completing the appropriate assessment, the Board considered, in particular, the following:

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

ii. the mitigation measures which are included as part of the current proposal, and

iii. the conservation objectives for the European Site.

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

In overall conclusion, the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European Sites, in view of the sites' Conservation Objectives.

Proper Planning and Sustainable Development

It is considered that, subject to compliance with the conditions set out below, the proposed development would be in accordance with the National Planning Framework, the Regional Spatial and Economic Strategy of the Southern Region 2020 and the provisions of the Tipperary County Development Plan 2022-2028. It would:

- make a positive contribution to Ireland's national strategic policy on renewable energy and its move to a low energy carbon future,
- not have an adverse impact on the landscape,
- not seriously injure the residential or visual amenities of the area,
- not adversely affect the natural heritage,
- not adversely impact the road network in the area, and
- be acceptable in terms of traffic safety and convenience.

The proposed development would, therefore, be in accordance with the proper planning and sustainable development of the area.

14.0 Conditions

1. The development shall be carried out and completed in accordance with the plans and particulars lodged with the planning application, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the planning authority, the developer shall agree such details in writing with the planning authority prior to the commencement of development and the proposed development shall be carried out and complied in accordance with the agreed particulars.

   Reason: In the interest or clarity.

2. The period during which the development hereby permitted may be carried out shall be ten years from the date of this Order.

Reason: Having regard to the nature and extent of the proposed development, the Board considered it appropriate to specify a period of validity of this permission in excess of five years.

3. The permission shall be for a period of 30 years from the date of the commissioning of the wind turbines. The wind turbines and related ancillary structures shall then be decommissioned and removed unless, prior to the end of the period, planning permission shall have been granted for their continuance for a further period.

Reason: To enable the relevant planning authority to review the operation of the wind farm in the light of the circumstances then prevailing.

4. The following design requirements shall be adhered to:

(a) The wind turbines shall be designed to a hub height of 103.5meters, a rotor blade diameter of 163 metres and an overall turbine height of 185 meters, in accordance with the turbine option assessed in the environmental impact assessment report and the Natura Impact Statement together with the other application documentation.

(b) The wind turbines, including masts and blades, and the wind monitoring mast, shall be finished externally in a light grey colour.

(c) Cables within the site shall be laid underground.

(d) No advertising material shall be placed on or otherwise affixed to any structure on the site without a prior grant of planning permission.

Reason: In the interest of clarity and visual amenity.

5. Prior to the commencement of development, the following shall be submitted to the planning authority for written agreement:

(a) a Stage 1 Road Safety Audit for the temporary and permanent access routes onto the public road,

(b) details of all cabling crossing culverts and streams,

(c) arrangements for planting behind sightlines at entrances,

(d) details of acoustic screening and/or additional screen planting, along the boundary with H038 and arrangements for pre/post condition survey of the dwelling (vibration),

(e) details of settlement ponds to provide long term SuDS measures to provide for loss of storage capacity (Flood Risk Assessment),

(d) provision of wheel wash within the site, near the entrance to the public road and an appropriately sized facility on site for concrete washings, and

(e) provision of a suitable protection area around the calcareous spring identified on the site (Figure 6-5).

Reason: In the interest of traffic safety, visual and residential amenity, environmental protection and flood risk.

6. a. The developer shall ensure that all construction methods and environmental mitigation measures set out in the Environmental Impact Assessment Report, the Natura Impact Statement and associated documentation are implemented in full in conjunction with the timelines therein, except as may otherwise be required in order to comply with the following conditions.,

   b. Prior to commencement of development, the developer shall submit to, and agree in writing with, the planning authority a schedule of these mitigation measures and monitoring commitments, and details of a time schedule for implementation of these. This programme shall include hydrographic monitoring of the site after rainfall events commencing preconstruction and concluding year 3 of the operational phase of the development. The results of the monitoring and reports arising shall be made available to the planning authority, Inland Fisheries Ireland and the National Parks and Wildlife Service.

   c. Prior to commencement of development, a revised Biodiversity and Enhancement Management Plan shall be submitted to the planning authority for written agreement, to include management

of spoil storage areas and replacement hedgerows and treelines, for wildlife over the life of the wind farm and an integrated approach to all biodiversity enhancement measures proposed in the application documents.

Reason: In the interest of clarity and the protection of the environment during the construction and operational phases of the development.

7. The developer shall retain the services of a suitably qualified and experienced Ecologist (to perform the role of Ecological Clerk of Works) to undertake pre-construction surveys at the various project elements, immediately prior to commencing work to check for the presence of protected species in the vicinity.

   Reason: To protect biodiversity.

8. The developer shall retain the services of a suitably qualified and experienced bird specialist to undertake appropriate bird surveys of the site, in accordance with the Bird Monitoring Programme. These shall include pre commencement confirmatory survey of bird species, including Hen Harrier.

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

9. Prior to the commencement of development, details of a post construction monitoring and reporting programme for bats, as indicated in the Bat Report, shall be submitted to and agreed in writing with the planning authority. The monitoring shall be undertaken by a suitably qualified and experienced bat specialist to identify any measures required to mitigate any identified effects. The survey shall be completed annually for a period of 3 years following the commissioning of the wind farm and copies of the report shall be submitted to the planning authority.

   Reason: To ensure the appropriate monitoring of the use of the site by bat species.

10. (a) The construction of the proposed development shall be managed in accordance with a final Construction and Environmental Management Plan, to include a final Traffic Management Plan, which shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development.

(b) The CEMP shall include but not be limited to operational controls for dust, noise and vibration, waste management, protection of soils and groundwaters and surface waters, protection of flora and fauna, site housekeeping, emergency response planning, site environmental policy, waste management, project roles and responsibilities.

(c) The CEMP shall include the location of all archaeological or cultural heritage constraints, as identified in the EIAR. The CEMP shall clearly describe all identified likely archaeological impacts, both direct and indirect, and all mitigation measures to be employed to protect the archaeological or cultural heritage environment during all phases of site preparation and construction activity.

(d) Prior to the commencement of development, the developer shall submit to, and agree in writing with, the planning authority arrangements for phasing of construction works, following consultation with the National Parks and Wildlife Service.

Reason: In the interest of environmental protection and residential amenity.

11. (a) The delivery of large-scale turbine components for the construction of the wind farm shall be managed in accordance with a finalised Traffic Management Plan. This plan shall provide details of the road network to be used by construction traffic, including oversized loads, and detailed arrangements for the protection of bridges, culverts and other structures to be traverses, as may be required. The plan shall also contain details of how the developer intends to engage with relevant parties (county councils, PPP companies etc.) and notify the local community in advance of the delivery of oversized loads.

(b) Any proposed works to the national road network to facilitate turbine delivery shall comply with the requirements of TII.

Reason: In the interest of public safety and residential amenity.

12. Commissioning and construction works shall be limited to the hours of between 0700 hours and 1900 hours Monday to Friday and 0800 hours and 1400 hours on Saturday and shall not be permitted on Sundays or public holidays.

Reason: To protect the amenities of nearby residential properties.

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

(a) Between the hours of 0700 and 2300:

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

(ii) 40 dB(A) $L_{90,\ 10min}$ a= at all other standardised 10-metre height above ground level wind speed.

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

Prior to the commencement of development, the developer shall submit to and agree in writing with the planning authority a noise compliance monitoring program for the subject development, including any mitigation measures such as the de-rating of particular turbines to accord with the above limits and to comply with the Site Specific Noise Limits presented in the EIAR. All noise measurements shall be carried out in accordance with ISO Recommendation R1996 “Assessment of Noise with Respect to Community Response” as amended by ISO Recommendation R 1996-1. the results of the initial noise compliance monitoring shall be submitted to and agreed in writing with the planning authority within six months of the commissioning of the wind farm.

Reason: in the interests of residential amenity.

14. (a) Appropriate software shall be employed on each of the turbines to ensure that there will be no shadow flicker at any existing nearby dwelling. Turbine shutdown shall be undertaken by the wind energy developer or operator in order to eliminate the potential for shadow flicker.

(b) A report shall be prepared by a suitably qualified person in accordance with the requirements of the planning authority indicating compliance with the above shadow flicker requirements at dwellings. Within 12 months of the commissioning of the wind farm, this report shall be prepared and submitted to, and agreed in writing with, the planning authority. The developer shall outline proposed measures to address any recorded non-compliances, controlling turbine rotation if necessary. A similar report may be requested by the planning authority at reasonable intervals thereafter.

Reason: In the interest of residential amenity

15. In the event that the developer does not utilise the government's Renewable Energy Support Scheme (RESS), prior to the commencement of development, a community gain proposal shall be submitted to the planning authority for written agreement. In default of agreement, the matter shall be referred to An Bord Pleanála for determination.

Reason: In the interest or the proper planning and sustainable development of the area.

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

Reason: In the interest of protecting telecommunication signals and residential amenity.

16. (a) Prior to commencement of development, the developer shall submit for written agreement of the planning authority, details of an obstacle warning light scheme which can be visible to night vision equipment.
    (b) Details of aeronautical requirements shall be submitted to, and agreed in writing with, the planning authority prior to commencement of development. Prior to commissioning of the turbines, the developer shall inform the planning authority and the Irish Aviation Authority of the as-constructed tip heights and co-ordinates of the turbines and wind monitoring mast.

Reason: In the interest of aviation safety.

17. The developer shall comply with the requirements of Irish Water with regard to diversion of infrastructure within the site and connections to the public network.

Reason: In the interest of public health.

18. The developer shall engage a suitably qualified archaeologist (licensed under the National Monuments Acts) to carry out archaeological geophysical survey at the location of the potential moated site, including the footprint of the borrow pit, turbine 1 and their associated section of access track and to submit an archaeological impact assessment report for the written agreement of the planning authority, following consultation with the National Monuments Service, in advance of any site preparation works or groundworks, including site investigation works/topsoil stripping/ site clearance and/or construction works.

The report shall include an archaeological impact statement and mitigation strategy. Where archaeological material is shown to be present, avoidance, preservation in-situ, preservation by record and/or monitoring may be required. Any further archaeological mitigation requirements specified by the planning authority, following consultation with the National Monuments Service, shall be complied with by the developer. No site preparation

and/or construction works shall be carried out on site until the archaeologist's report has been submitted to and approval to proceed is agreed in writing with the planning authority. The planning authority and the National Monuments Service shall be furnished with a final archaeological report describing the results of any subsequent archaeological investigative works and/or monitoring following the completion of all archaeological work on site and the completion of any necessary post-excavation work. All resulting and associated archaeological costs shall be borne by the developer.

Reason: To ensure the continued preservation of places, caves, sites, features or other objects of archaeological interest.

19. The developer shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard, the developer shall:

(a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, and

(b) employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works.

The assessment shall address the following issues:

(i) the nature and location of archaeological material on the site, and

(ii) the impact of the proposed development on such archaeological material.

A report, containing the results of the assessment, shall be submitted to the planning authority and, arising from this assessment, the developer shall agree in writing with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works.

In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the area and to secure the preservation (in-situ or by record) and protection of any archaeological remains that may exist within the site.

20. On full or partial decommissioning of the wind farm, or if the wind farm ceases operation for a period of more than 1 year, the turbines and all decommissioned structures shall be removed, and foundations covered with soil to facilitate revegetation. These reinstatement works shall be completed to the written satisfaction of the planning authority within three months of decommissioning or cessation of operation.

Reason: To ensure a satisfactory reinstatement of the site upon cessation of the project.

21. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of public roads which may be damaged by the transport of materials to the site, coupled with an agreement empowering the local authority to apply such security or part thereof to the satisfactory reinstatement of the public road. The form and amount of the security shall be as agreed between the planning authority and the developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: To ensure the satisfactory completion of the development.

22. Prior to commencement of development, the developer shall lodge with the planning authority a cash deposit, a bond of an insurance company, or such other security as may be acceptable to the planning authority, to secure the reinstatement of the site upon cessation of the project, coupled with an agreement empowering the local authority to apply such security or part thereof to secure such reinstatement. The form and amount of the security shall be as agreed between the planning authority and the

developer or, in default of agreement, shall be referred to An Bord Pleanála for determination.

Reason: To ensure the satisfactory completion of the development.

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

Reason: It is a requirement of the Planning and Development Act 2000, as amended, that a condition requiring a contribution in accordance with the Development Contribution Scheme made under section 48 of the Act be applied to the permission.

I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

Deirdre MacGabhann

Senior Planning Inspector

26th June 2024