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**Volume I: Non-Technical Summary**  
**Ballynisky Wind Farm Project**

**Ballynisky Green Energy**

**December 2025**

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## 1. Introduction

Ballynisky Green Energy Ltd. (the 'Applicant') is seeking 10-year planning permission from Limerick City and County Council (LCCC) (competent Planning Authority) for a proposed wind energy project in Co. Limerick, named Ballynisky Wind Farm (Proposed Development). The location of the Proposed Development site is shown in Figure 1-1. Malachy Walsh and Partners (MWP) have been engaged by the Applicant to prepare an Environmental Impact Assessment Report (EIAR) to accompany the planning application. A full description of the Proposed Development and development lands of the project is provided in Chapter 03 of Volume II of the EIAR.

This Non-Technical Summary (NTS) is the first volume of the EIAR for the Proposed Development. The other volumes which comprise the EIAR are:

- Volume II: Main Environmental Impact Assessment Report;
- Volume III: Appendices; and
- Volume IV: Photomontages.

The purpose of this NTS is to provide a concise overview in non-technical terms of the project, environmental effects and mitigation measures highlighted by the Environmental Impact Assessment (EIA) and presented in detail in the main EIAR, Volume II.

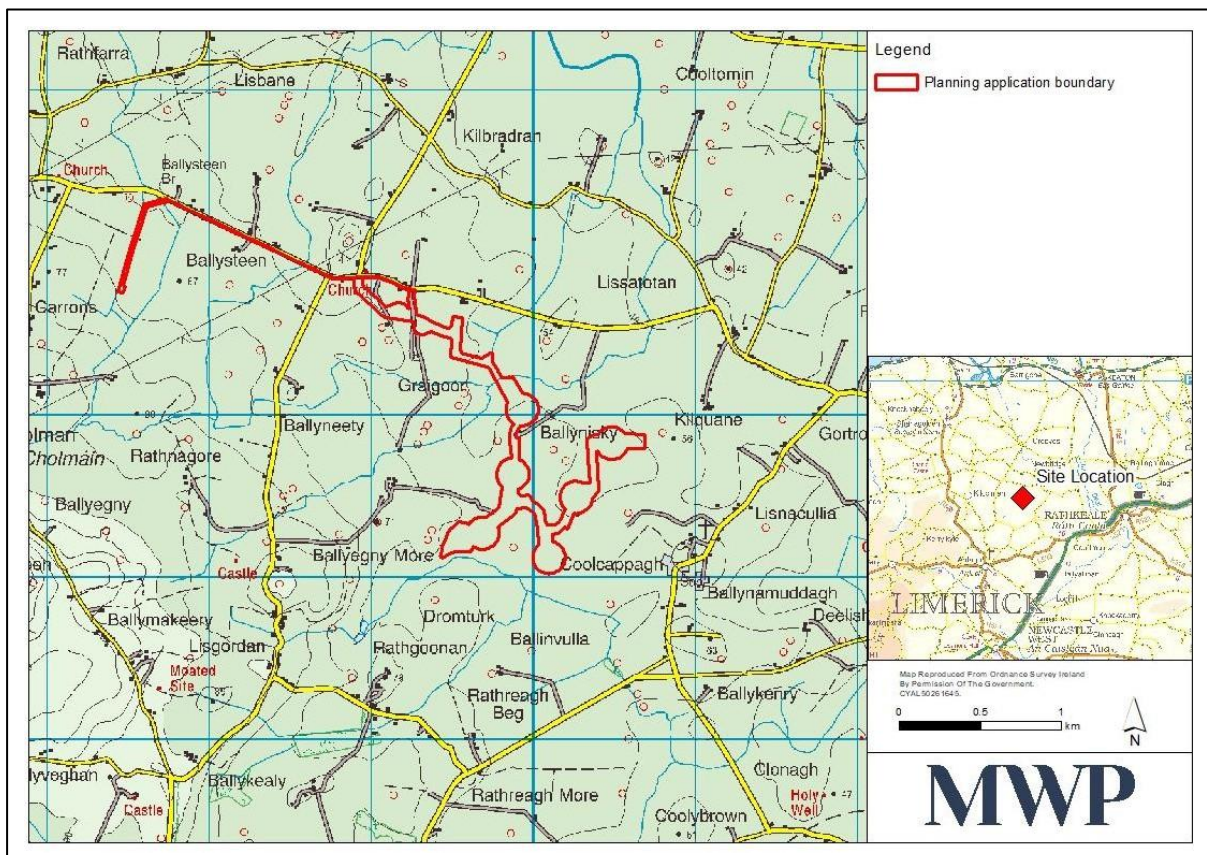


Figure 1-1: Ballynisky Wind Farm Location

## 1.1 The Applicant

Ballynisky Green Energy Ltd. is part of a privately owned, innovative Irish renewable energy company based in Adare, Co. Limerick that specialises in the development of renewable energy projects, working with communities from pre-planning to operation, and creating long-lasting local partnerships. The project team has over ten years development and operational experience. The company has a highly skilled and experienced team who are committed to developing projects with successful outcomes for all stakeholders.

This is a resubmission of the application submitted in October 2025. The original application was deemed incomplete. A pre-planning meeting was held with LCCC on the 18th of December 2025, where details relating to the deeming incomplete of the previous application (LCCC- 2561003) for a wind farm development on the site were discussed.

## 1.2 Overview of Proposed Development

The main components of the development include six (6) wind turbines with a height of 158m to provide approximately 27 megawatts (MW) of renewable electricity, an on-site 38kV electrical substation, Grid Option A consisting of an underground electrical connection to an existing 38kV substation at the nearby Carrons Wind Farm which is connected to the National Grid and Grid Option B consisting of looping into the existing 38kV overhead line that transects the site.

The components of the Proposed Development are summarised in Table 1-1 and the layout is illustrated in Figure 1-2.

**Table 1-1: Summary of the Proposed Development**

Proposed Development for which planning permission is being sought

- Six (6) wind turbines with a tip height of 158m, a rotor diameter of 136m and all associated foundations and hardstanding areas.
- A 38kV on-site substation compound containing a substation building, associated electrical equipment and transformers with separate client side and ESB entrances. The building will contain a control room, switchgear room, ESB room and store room.
- Underground electrical and communications cabling between the wind turbines and on-site substation.
- Grid Option A: 2.54km-long 38kV underground cable connection from the on-site substation to the existing Carrons substation to the west of the site.
- Grid Option B: Loop into the existing 38kV onsite overhead line via the proposed 38kV substation.
- A new temporary site entrance off the L1219 local road to the west of the permanent site entrance for the construction phase only.
- Upgrade of an existing farm entrance and access track off the L1219 local road in the northwest of the site to serve as a permanent site entrance for the wind farm when operational.
- Approximately 3.4km of new site access tracks with associated turning areas and drainage. This includes approximately 490m of temporary access tracks which will be reinstated following construction.
- Upgrade of approximately 470m of existing site access tracks.
- A 9m-long clear span bridge crossing of the Ahacronane River by an internal site access track to the northwest of turbine T1 and an associated 1.5m x 1.0m relief culvert.
- A permanent meteorological mast with a height of 90m, a foundation and hardstand.
- Two (2) material storage areas with a total capacity of approximately 39,300m<sup>3</sup>.
- A temporary construction compound with an area of approximately 1,375m<sup>2</sup>.
- All associated site development works, including drainage, diversion or undergrounding of low voltage powerlines, landscaping and revegetation.

Other Associated Project

Components subject to EIA for which planning permission is not being sought within the current application

- Temporary works which may be required on sections of the public road network along the turbine delivery route such as hedge/tree cutting, relocation of powerlines/poles, lampposts, signage and road widening where required.

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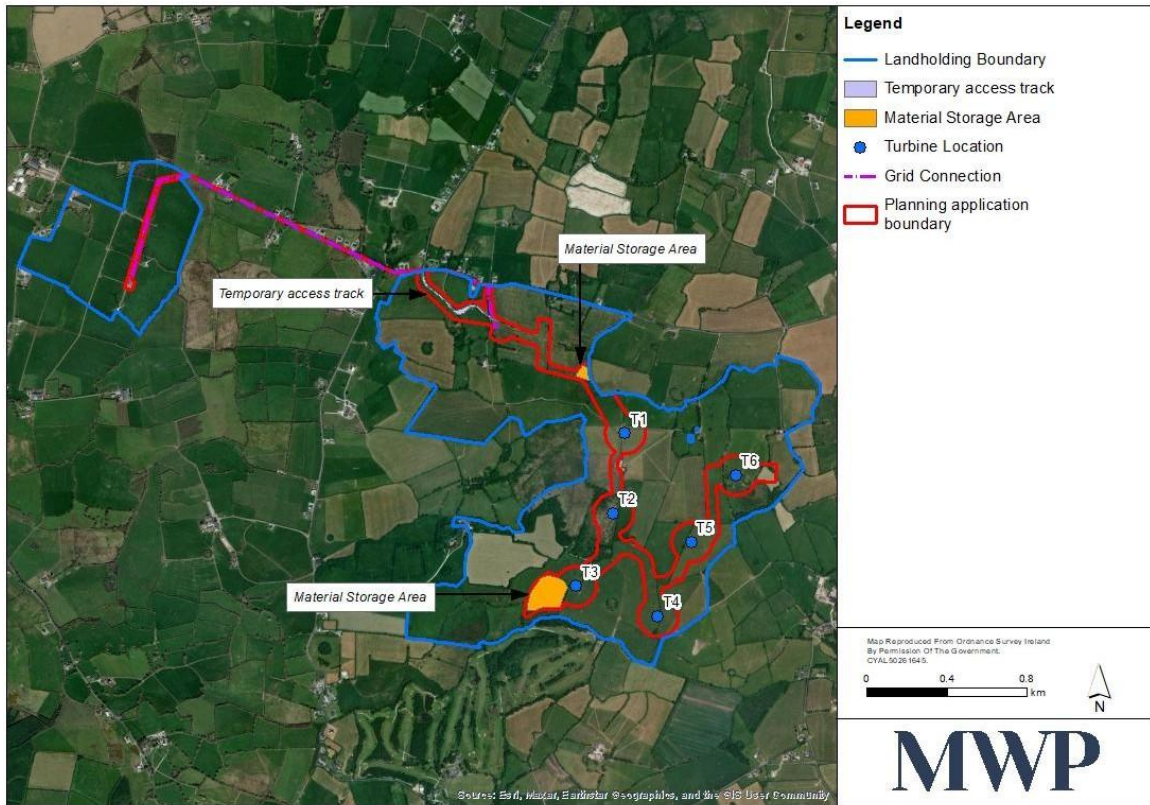


Figure 1-2: Proposed Development Layout

### 1.3 Site Location

The proposed development site is located in the townlands of Ballynisky, Graigoor, Balleigny More, Kilbradran, Ballysteen, Dunmoylan, Carrons, and Lisbane, to the west of Coolcappa, Co. Limerick (Figure 1-3). It lies approximately 9km north of Newcastle West and 6km northwest of Rathkeale (Figure 1-1). The site and surrounding area are in a rural setting with landcover comprising mainly agricultural land, farmsteads and one-off residential houses.

Features of note in the surrounding area include Carrons Wind Farm to the west and Creeves Quarry to the north.

Access to the site will be via the L1219 local road to the northwest of the site. The R521 between Foynes and Newcastle West is located to the west of the site. The R521 links the N21 National Primary Road to the southeast and the N69 to the north. The R521 can also be accessed at Ardagh from the R523 south of Rathkeale.

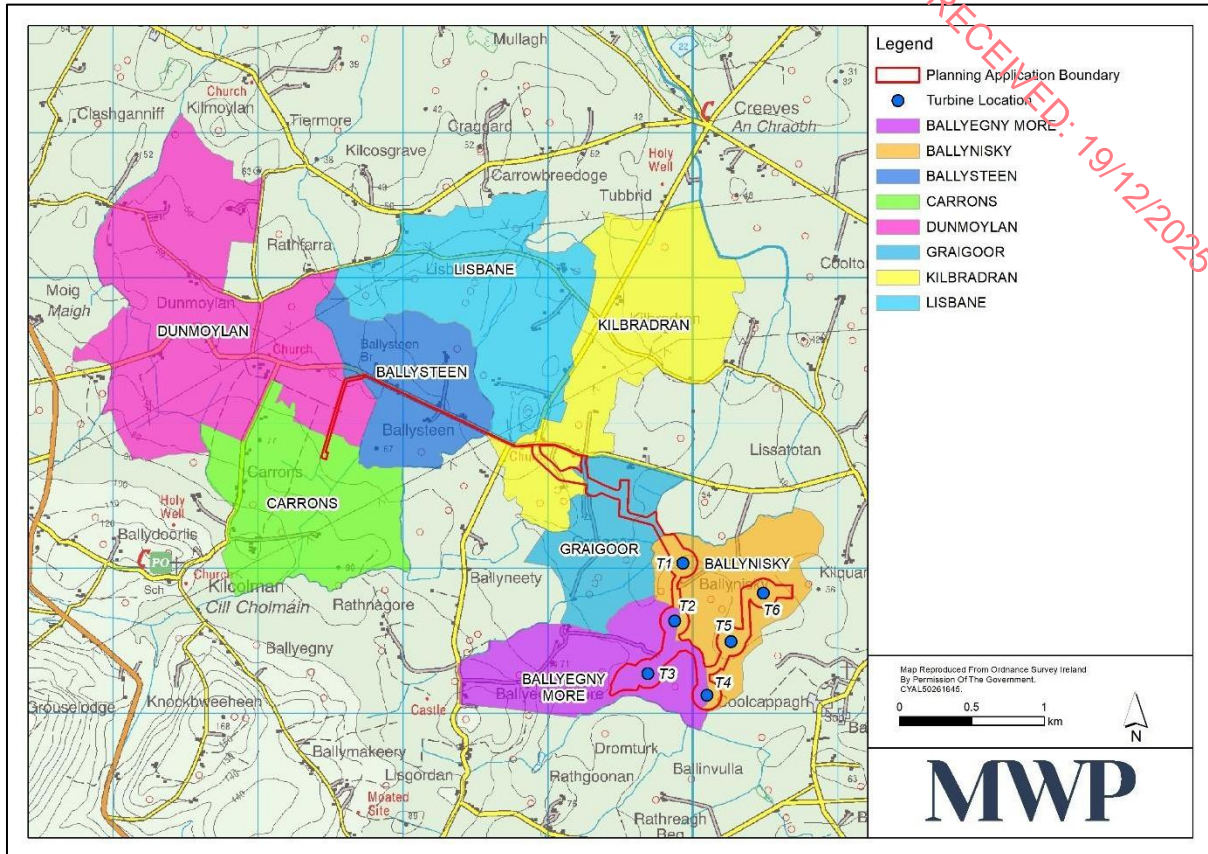


Figure 1-3: Townlands associated with the Proposed Development

## 1.4 EIA Study Area

The planning application development site boundary includes a total land area of approximately 43.02 hectares (ha). During the project EIA and design process this area has been substantially reduced in size eliminating areas that were considered unsuitable and concentrating on areas that were deemed appropriate for locating wind turbines and associated infrastructure. The project/ study area which is referred to in the figures throughout this EIA incorporates a larger assessment area than presented in the planning application drawings. It will also vary from topic to topic depending on the zone of influence and sensitive receptors being assessed. This is reflected accordingly in each chapter.

## 2. Description of the Proposed Development

### 2.1 Overview

It is being proposed by the Applicant to develop a wind farm (named Ballynisky Wind Farm) comprising six (6) No. wind turbines in Co. Limerick with a maximum tip height of up to 158 metres. All of the turbines will have a hub height of 90m and a blade length of approximately 68m. Each wind turbine will have a reinforced concrete base pad foundation with a central plinth above the base, which will support the tower.

The Proposed Development includes a 38kV substation onsite for exporting power from the wind farm to the national electricity grid. The proposed substation will include a substation building, associated electrical

equipment and transformers with separate client side and ESB entrances. The building will contain a control room, switchgear room, ESB room and store room.

A network of underground cabling serving each turbine with electrical power and signal transmission will be installed along internal service roads connecting to the sub-station compound. There will be no overhead power lines constructed on the site.

A permanent meteorological mast will be erected within the site to monitor the local wind regime while the wind farm is in operation. It will be 90m high (in line with the hub height of the proposed turbines) and located to the east of the wind farm substation.

## 2.2 Construction Phase

Subject to planning permission, it is envisaged that work would commence at the site in 2026, with a duration of 12 to 16 months. The start date is dependent on planning being granted, receipt of a grid connection offer from EirGrid, funding and all permits being in place.

Normal construction activities will be undertaken within the hours 07.00am – 7.00pm, Monday to Friday and 07.00am to 2.00pm on Saturdays. Due to the requirement for the concrete pours to be continuous, the working day may extend outside normal working hours in order to limit the traffic impact on other road users, particularly during peak period school and work commuter traffic. Such activities are limited to the day of turbine foundation concrete pours, which are normally complete in a single day per turbine. Turbine and crane erections may also occasionally occur outside of these times in order to take advantage of low wind periods. Working hours will be confirmed at the outset of the project and any changes in hours will be agreed with the LCCC.

Works along public roads would be from 9.00a.m. to 5.00p.m. Monday to Friday and 9.00a.m. to 2.00p.m. on Saturdays.

A permit for moving abnormal loads will be sought from An Garda Síochána for the delivery of oversized wind turbine components (i.e. blades, nacelles and towers).

No work will take place on Sundays or bank holidays unless agreed in advance with the LCCC.

During the construction phase, the number of on-site construction personnel will vary for each phase of the development. Overall, it is envisaged that the Proposed Development would generate employment for 30 – 35 persons during the construction phase to include site contractors, on-site vehicle and plant operators, engineers, materials delivery personnel, environmental personnel, health and safety personnel. A further 3-5 personnel will be required for the export cable route works.

Primary access to the proposed development site will be provided from the local public road, the L1219 (refer to Figure 1-2). A temporary site entrance will be established for the construction phase, and a permanent site entrance will be established to provide access to the wind farm during operation. The temporary entrance will be located to the northwest of the site on the L1219 close to its junction with the L1220 and will only be used for the duration of the construction works (14-16 months). The permanent site entrance, which utilises an existing farm track, will be located further east on the L1219 local road for access during the operational life of the wind farm.

During construction works, there will be a temporary compound located in the northwest corner of the site adjacent to the proposed substation area. The temporary compound will be set up upon commencement of the construction phase. The compound will have a plan area of approximately 1,375m<sup>2</sup>.

As there will be no on-site borrow pit, all construction materials, which will include stone and quarry-run material for various uses at the site, will be imported from local quarries. Graded crushed limestone will be used as a running course on all internal access roads to assist in reducing sediment run-off during rainfall events.

A site drainage system will be constructed on the site so as to attenuate run-off, guard against soil erosion and safeguard downstream water quality.

### 2.2.1 Production of Waste

All soils and subsoils generated from excavation works will be retained on site and reused in reinstatement, revegetation and landscaping works. Excess spoil material will be stored on site in two (2) designated material storage areas. One storage area will be located on lands southwest of T3 and the other will be to the east of the temporary compound.

Wastewater from welfare facilities on site will drain to integrated wastewater holding tanks associated with the toilet units. The stored effluent will then be collected on a regular basis from site by a permitted waste contractor and removed to a licensed/permitted waste facility for treatment and disposal.

Construction phase waste may consist of hardcore, concrete, spare steel reinforcement, shuttering timber and unused oil, diesel and building materials. This waste will be stored in the construction compound and collected at the end of the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. Plastic waste will be taken for recycling by an approved contractor and removed to an approved recycling facility. Domestic type waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compound and removed by an approved contractor to an appropriately authorised waste facility.

### 2.2.2 Emissions and Disturbances

The anticipated residues and emissions likely to be generated during the project lifetime are summarised in Table 2-1. These environmental effects have been identified, assessed and proposals for management of the anticipated disturbances and/or emissions are presented throughout relevant chapters of this EIAR.

**Table 2-1: Emissions and Disturbances**

Aspect	Potential Emission/Disturbance	Assessment Provided
Air	<p>The main emission to atmosphere during the construction stage of the project is from fugitive dust associated with the following activities:</p> <ul style="list-style-type: none"> <li>- Groundworks associated with the construction of the project infrastructure;</li> <li>- Transportation and unloading of crushed stone around the site;</li> <li>- Vehicular movement over potentially hard dusty surfaces such as freshly excavated and constructed access tracks and crane hardstanding areas;</li> <li>- Vehicular movement over material potentially carried off site and deposited on public roads.</li> </ul> <p>The movement of machinery, construction vehicles and the use of generators during the construction phase will also generate exhaust fumes containing predominantly carbon dioxide (CO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), and particulate matter (PM<sub>10</sub>).</p>	EIAR Vol 2 Chapter 10 Air and Climate
Noise	Traffic flows, excavation/blasting mechanical machinery and electrical equipment typically used for construction projects would generate noise emissions.	EIAR Vol 2 Chapter 11 Noise and Vibration
Water	Surface water runoff and discharges from construction working areas are likely during construction, although overall the quantity of surface runoff would not change overall as a result of the construction work. Occasional and low quantity discharges could arise from pumping in order to dewater foundation excavations.	EIAR Vol 2 Chapter 8 Water

Aspect	Potential Emission/Disturbance	Assessment Provided
	This would be discharged to the proposed site drainage system. Pollution sources could arise as a result of soil erosion or from oil/ fuel or chemical storage and use. Proposals for management of water quality and quantity from the proposed development are presented in EIAR Volume 4: Appendix 2-B: CEMP.	
Traffic	The additional traffic, especially heavy goods vehicles associated with the construction phase, has the potential to cause disturbance to those using the local road networks.	EIAR Vol 2 Chapter 5 Population & Human Health, Chapter 14, Material Assets of the EIAR

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### 2.3 Operational Phase

During the operation of the wind farm, the turbine manufacturer, the developer or a service company will carry out regular monitoring and maintenance of the turbines and the substation. In addition, operation and monitoring activities will be carried out remotely using a SCADA system. Routine inspection and preventive maintenance visits will be necessary to ensure the smooth and efficient running of the wind farm. At the end of the estimated 35 year lifespan of the project, the developer will make the decision whether to repower or decommission the turbines and this will likely be subject to a new planning permission application.

It is unlikely that the 38kV underground cable connection link to the onsite substation or the existing Carrons wind farm substation will require any significant maintenance during its operational life. Any interaction with the underground cable route connection would likely relate to upgrading or replacement or dealing with a localised integrity issue.

### 2.4 Decommissioning

At the end of the estimated 35 year lifespan, the developer will make the decision whether to apply for permission to repower the wind farm, or to decommission the turbines. Any further proposals for development at the site during or after this time will be subject to a new planning application and will be subject to environmental assessment. If planning permission is not sought after the end of life of the turbines, the site will be decommissioned and partially reinstated with all turbines and towers removed. Removal of infrastructure will be undertaken in line with landowner(s) and regulatory requirements and best practice applicable at the time. The information below outlines the likely decommissioning tasks based on current requirements and best practice.

Prior to the decommissioning work, the following will be provided to LCCC for approval:

- A plan outlining measures to ensure the safety of the public workforce and the use of best available techniques at the time; and
- A comprehensive reinstatement proposal, including the implementation of a programme that details the removal of all structures and landscaping.

If the site is to be decommissioned, cranes of similar size to those used for construction will disassemble each turbine. The towers, blades and all components will then be removed and recycled as appropriate.

At present it is anticipated that underground cables connecting the turbines to the substation will be cut back and left underground. The cables will not be removed if an environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them *in situ*. The assessment will be carried out closer to the time to take into account environmental changes over the project life.

The new 38kV substation will remain in place as it will be under the ownership of ESB/EirGrid and will operate as an asset to the National Grid going forward.

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Hardstand and turbine foundation areas will be left in situ and covered with soil to match the existing landscape. Access roads will be left for use by the landowners.

Wastes generated during the decommissioning phase will be taken off site and disposed of at an authorised waste facility. Any materials suitable for recycling will be disposed of in an appropriate manner.

## 2.5 Cumulative Assessment

The project was considered in combination with other relevant plans and projects that could result in cumulative effects. Other windfarms within a 20-km radius were also considered cumulatively, and shown in Table 2-2.

**Table 2-2: Windfarms within a 20-km radius of the proposed Ballynisky Windfarm**

Wind Farm	Status	Number of Turbines	Approximate distance and direction from proposed development
Carrons	Operational	2	1.5 km west of proposed development
Grouse Lodge	Operational	6	3.8 km southwest of proposed development
Dromada	Operational	19	13 km southwest of proposed development
Kilmeedy	Operational	2	14.5 km southeast of proposed development
Rathcahill	Operational	5	15.3 km southwest of proposed development
Tournafulla	Operational	18	16.8 km southwest of proposed development
Ballagh	Operational	2	18.1 km south of proposed development
Gortnacloghy	Operational	2	18.5 km south of proposed development
Cratloe West	Operational	5	18.8 km southwest of proposed development
Kilathmoy	Operational	7	19.4 km southwest of proposed development
Tooradoo	Operational	2	19.2 km southwest of proposed development
Upper Athea	Operational	2	19.5 km southwest of proposed development

Cumulative impacts regarding air quality, increased emissions and disturbances, and increased traffic are all associated with the construction phase of the development on the surrounding environment and local road network. In considering cumulative effects with other planned or approved projects (including existing wind farms), construction effects will have a cumulative effect on the receiving environment, only if other reasonably foreseeable proposals are constructed in close vicinity to the proposed developments construction and at the same time. Any cumulative traffic effects/impacts on the local road networks due to construction works associated with possible developments would be temporary and short-term.

Cumulative impacts related to each chapter topic of this EIAR are addressed fully in the relevant chapter, while a brief description of each chapter is contained in this NTS.

## 2.6 Risk of Major Accidents and Disasters

It is considered that there is no risk for the Proposed Development to cause major accidents and/or disasters or vulnerability of the project to potential disasters/accidents, including the risk to the project of both natural disasters and man-made disasters.

Given the temporary nature of the construction stage and the scale of the Proposed Development, as well as the environmental protection measures that will be implemented from the outset, the risk of disasters (typically considered to be natural catastrophes e.g., very severe weather event) or accidents (e.g., fuel spill, traffic accident or peat slide) is considered low.

In the case of the occurrence of a severe weather event such as flooding during construction, construction work will cease.

## 2.7 Impact of Climate Change

There is potential for the Proposed Development to be impacted by severe weather including increased wind and storms due to climate change. However, wind turbines are designed to withstand extreme weather conditions with brake mechanisms installed within the turbines so that they only operate under specific wind speeds and will shut-down during high wind speed events. Therefore, there is very low risk to the Proposed Development from high wind speeds.

Flood risk is considered in Appendix 8A and summarised in Chapter 8 of the EIAR to determine whether the site is at risk from extreme fluvial flooding events. This assessment concluded that the Ahacronane River is prone to flooding between the substation location and Turbine 1. Hydraulic modelling has been undertaken to determine the impact of the Proposed Development on the surrounding floodplain and also to determine the flood levels of the river for the 100Yr and 1000Yr return period flood events. The modelling included a 20% allowance for the effects of climate change in line with the Mid-Range Future Scenario (MRFS) as recommended by the OPW.

The substation and all turbines have been located above the 1000Yr return period flood level for the river including allowance for a 300mm freeboard. The soffit level for the proposed clear span crossing of the Ahacronane River has been selected to allow a 340mm freeboard to the 100Yr flood level.

Further information on the impact of the Proposed Development on climate change is addressed in Chapter 10 Air and Climate.

## 2.8 Alternatives Considered

The consideration of Alternatives is a mandatory part of the EIA process. The legal requirements of the 2014 EIA Directive, relating to the assessment of Alternatives, are set out in Article 5(1)(d) and Annex IV point 2 of the Directive.

During the project design process alternative wind farm layouts and scales were fully considered in order to find the optimum design solution for the site with the least level of environmental impact. The Alternatives chapter (Chapter 4 of the EIAR) therefore outlines the site selection process, the process of design evolution for the proposed development, the reasonable alternatives considered during the project inception and design process including a comparison of the environmental effects and the principal reasons for proceeding with the current planning application. The following elements are considered further in this chapter:

- Site Selection;

- Project Design Process; and
- Alternatives Considered.

The proposed development has been designed to minimise potential environmental impacts and to maximise wind potential on site.

The wind farm has been designed following a step by step EIA process which informed and identified the buildable areas suited to turbines, roads and infrastructure based on avoidance of unsuitable areas and following the good practice of mitigation by design. More details on the project design and evolution can be read in EIAR Volume 2 Chapter 3 and Chapter 4.

The final site layout or final alternative was determined based on multi-discipline inputs and consideration of topography, biodiversity, land and soils, hydrology, landscape, and engineering constraints and assessments. The development as proposed is the preferred option as it results in the least effects on resources and receptors while meeting the project objectives of a large scale renewable wind energy development.

### 3. Environmental Assessment

The EIAR has been carried out in accordance with the relevant legislative requirements and guidelines, including the Environmental Protection Agency (EPA) - 'Guidelines on Information to be Contained in an Environmental Impact Assessment Reports, 2022'. Specialist guidance as required for each of the environmental topics has also been used where appropriate.

A summary of each prescribed environmental factor considered in this EIAR is outlined in the following sections.

#### 3.1 Population and Human Health

The scope of the Population and Human Health assessment considers the effects of the construction, operation and decommissioning of the Proposed Development in terms of how the proposal could affect economic activity and employment, social considerations and land use, amenities and tourism, and health and well-being.

Newcastle West (population 7,209, CSO 2022), which is approximately 9km to the south of the project area is the largest urban centre relative to the site of the Proposed Development and is a large service and employment centre in the region. Smaller population centres in the general locality are the towns and villages of Coolcappa, Kilcolman, Ardagh, Shanagolden, Foynes, and Askeaton. These towns and small villages provide a range of local community facilities, including primary schools, sporting clubs, churches, general shops, and post offices.

The proposed development lands extend across part of the rural townlands of Ballynisky, Graigoor, Ballegny More, Kilbradran, Ballysteen, Dunmoyle, Carrons, and Lisbane.

Settlement patterns located in the vicinity of the proposed development lands is typical of a rural area, primarily consisting of farms and one-off residential housing. The greatest density of settlement occurs along local road networks surrounding the proposed development area and appeared in clustered and ribbon development. There are no residential dwellings within the proposed development site boundary. The land which the Proposed Development is located consists predominantly of agricultural land within a rural setting. The surrounding land use is a mixture of pastures and land principally occupied by agriculture.

While there are no tourist attractions pertaining specifically to the site of the Proposed Development, there are a number of cultural amenities and tourism locations in the wider area. The closest attraction to the development site is Desmond Hall (located in Newcastle West) which is located approximately 9km from the Proposed

Development. Amenities located within close proximity to the proposed development site include the Newcastle West Golf course and the Limerick Greenway. The Newcastle West Golf Course Club House is located approximately 1km south of Turbine 3. The Limerick Greenway is located 2.3km south of the Proposed Development site at its closest point. Due to the rural nature of the proposed development site, there are limited hotels or B&Bs in the surrounding area.

Given that there are currently no tourist attractions specifically pertaining to the proposed development site there are no direct impacts associated with the construction phase of the Proposed Development.

During the construction phase of the Proposed Development, approximately 30 to 35 people will be employed over a 12–16-month construction phase which will have a direct, positive, short-term to temporary and moderate impact on employment in the local area.

Construction activities can cause a disturbance to the local community and are likely to pose temporary minor disturbances locally. The most notable of these disturbances relates to the generation of additional traffic on the local networks. Noise and safety implications are also a concern. However, disturbances associated with the additional volumes of traffic will principally be confined to the construction phase and will cease on completion of works. The construction phase will be managed to minimise the impact on the human environment and the local residents. Dust and noise impacts from construction works are not expected to cause a significant impact, with the implementation of mitigation measures. No significant negative effects on the local human environment are expected.

During operation, the most likely effect would be shadow flicker. This is defined as the alternating light intensity produced by a wind turbine as the rotating blade casts a shadow on the ground and stationary objects, such as the windows of a residence. Shadow flicker cannot occur when the turbine is not rotating or when the sun is obscured by clouds or fog. The scope of the assessment for shadow flicker extends to a distance of 10 times the maximum rotor diameter, in this case 1.36km. There are 93 properties within this assessment area. If no mitigation is implemented, there is expected to be under 30 hours per year of shadow flicker occurring at these properties, well below the threshold. Shadow flicker control measures modules are to be installed on each of the turbines that will stand down the turbines during periods where shadow flicker is predicted to occur.

The operational phase of the proposed development is therefore not expected to present any adverse impacts on the human environment. With the implementation of mitigation measures, shadow flicker effects associated with the operational phase will be eliminated at receptors.

The visual factor of the development is perhaps the most intrusive aspect. Given the size of the turbine structures and their proposed position within a relatively flat landscape, a visual consequence is unavoidable. The extent of intrusion will vary in degree and significance according to viewing distance, the numbers and parts of turbines visible, the number of viewers affected and of course public perception.

The production of electricity by wind energy is environmentally-friendly and thus prevents risk of air pollution and risk to human health.

In relation to the local community, with Community Benefit Fund Guidelines, governed by the Sustainable Energy Authority of Ireland (SEAI), and based on the current project scope, the Proposed Development will generate a Community Benefit Fund of approximately €150,000 per annum, which will result in a positive impact on the local community economy.

### 3.2 Biodiversity

The proposed development site is mostly used for grass production, carrying livestock and for silage production. The proposed development site is of no particular value for any habitat and most of the habitats directly affected

are evaluated as being of a low ecological value. These habitats include improved agricultural grassland as well as buildings and artificial surfaces of local importance (lower value). These habitats are of some local importance for wildlife and /or are of some importance in maintaining habitat links.

There are some locally important habitats in poorly drained wetter parts of the site, the dominant habitat in such areas being wet grassland, evaluated as being of local importance (higher value). Field boundaries comprising hedgerows and some treelines are also evaluated as being of local importance (higher value), as they are essential in maintaining links and ecological corridors between features of higher ecological value. These linear features are considered to support protected species such as hedgehog and pygmy shrew and used to some degree by foraging bats. Scrub and mixed broadleaved woodland have ecological value with respect to the fauna they support and the shelter they provide, including insects, small mammals and birds. The poor fen and flush habitat at Ballynisky pond is evaluated as a feature of county importance but this will be avoided during construction.

Some of ecologically important habitats within the site boundary will be lost as the footprint of the proposed development overlies them. With implementation of avoidance mitigation and working according to a CEMP, the direct impact footprint can be reduced, thereby lessening the scale of impacts on habitats. Loss of ecologically important habitats, or Key Ecological Receptor (KER) habitats, will constitute an adverse ecological impact within the proposed development site boundary, but these habitats are common in the wider local environment so in terms of habitat loss, the impact of the Proposed Development on habitats and wildlife at the local level is not assessed as significant.

There will be an overall biodiversity net gain (BNG) at operation stage when compared to the existing situation in the short (1-7 yrs) to medium term (7-15yrs). Hedgerow, scrub, wildflower meadow and woodland form part of the compensation measures required to achieve BNG. These will take time to establish, grow and mature and will become more ecologically significant in proportion to age.

The site is suboptimal for most protected non-volant fauna and for bats. Hare, badger and a number of bat species were recorded at the proposed development site but only hare and three species of bat were selected as KERs. The ecological significance of the Proposed Development on mammalian fauna following mitigation is assessed as moderate in the case of hare, hedgehog, pygmy shrew and Leisler's bat, and slight for otter, soprano pipistrelle bat and common pipistrelle bat. There will be some habitat fragmentation caused by construction and associated disruption of mammals, but links will be re-established with the compensation measures proposed.

The watercourses draining the proposed development site are polluted and as a result, water quality is unsatisfactory. The aquatic macroinvertebrate community is degraded in all receiving waterbodies, including the Ahacronane River and the Riddlestown Stream, the two primary waterbodies draining the site. The Ahacronane River does support a population of brown trout and European eel and perhaps brook lamprey also. The fish community of the Riddlestown Stream is less diverse with only three-spined stickleback recorded at survey locations near the proposed development site. The watercourses that drain the site become increasingly important for fish and protected fauna as they increase in size with distance downstream of the proposed development site. The River Deel, into which the Riddlestown Stream flows supports otter, eel, salmon, brook lamprey and brown trout. The fact that the Proposed Development is largely setback from watercourses (buffer of 50m applied to infrastructure except for watercourse crossings), no instream works are required, that the proposed development site is low gradient, that a site-specific drainage system designed to capture wind farm-related sediment run-off, and with implementation of mitigation, the impacts on water quality and dependent aquatic fauna will not be significant (assessed as slight negative following mitigation). Currently, there are no/limited buffers along the Ahacronane River and Rathnagore-Riddlestown Stream. The development of riparian buffer zones and installation of cattle drinkers along these watercourses can be expected to benefit water quality and aquatic life adjacent to and downstream of the proposed development site.

Residual impacts on biodiversity will remain including impacts to habitats, flora, fauna and water quality but are not considered significant as mitigation measures will be implemented in full during the construction and operational phases of the Proposed Development.

Provided that the Proposed Development is constructed and operated in accordance with the design, best practice and mitigation that is described, significant effects on ecology are not anticipated at the international, national or county scales or on any of the identified KERs. While the Proposed Development involves intrusion and disturbance, the overall outcome for biodiversity will be positive given commitments to set aside lands that will not be managed for grass production and associated drainage, reseeding and regular fertilisation.

The Applicant is committed to the mitigation, compensation and enhancement measures set out in the Biodiversity chapter and have landowner consent. The Applicant will engage fully with the LCCC, with input from a professional ecologist to deliver BNG at the proposed development site through a monitoring programme. This will include a detailed explanation of what is to be done, how it will be achieved, where and when it is to be carried out, and who is responsible for ensuring that works are undertaken as proposed. The Proposed Development supports the National Biodiversity Action Plan.

### 3.3 Ornithology

This assessment considered the potential effects the Proposed Development may have on birds within the study area and also on birds in the surrounding area. The methodology used for this study included desk-based research of published information and site visits to assemble information on the local receiving environment. This chapter of the EIA for the Proposed Development assesses potential impacts on ornithological features, including sites, habitats and species.

Field surveys were undertaken over a five-year period from 2020 to 2025, to gather detailed information on bird distribution and flight activity to predict potential effects of the Proposed Development on birds.

The bird surveys encompassed the following survey types:

- Vantage Point (VP) Surveys;
- Walked Transect Surveys;
- Hinterland Bird Surveys;
- Wildfowl Distribution Surveys;
- Wading Bird Surveys;
- Birds of Prey Surveys;
- Breeding Barn Owl Surveys;
- Breeding Peregrine Surveys;
- Hen Harrier Survey.

During the construction phase, habitat loss can be direct due to the permanent and temporary reductions to the extent, quality and connectivity of the habitats present for birds and the disturbance and displacement of nesting, flying, sheltering and foraging birds, and the potential to cause displacement of birds into lands outside of the project footprints.

Direct habitat loss or change is inevitable in the development of any wind farm, especially when the establishment of access roads, turbines, substation buildings and other associated construction and decommissioning is considered. This can result in reduced habitat heterogeneity and connectivity as well as reduced feeding, nesting,

roosting, and commuting opportunities for protected and priority bird species; notably those identified within this report, including barn owl, birds of prey and non-target farmland birds. The permanent land take will be largely limited to the area of the turbine bases, new access tracks, electrical substation, and a met mast. Temporary land take during construction and decommissioning will additionally include temporary access tracks for site vehicles and machinery, crane hard standing areas and lay down areas for each turbine, and a site compound with associated car parking. Temporary land take may also occur at 'pinch points' along the Turbine Delivery Route (TDR) where vegetation will need to be pruned to enable the transport of turbine infrastructure.

Potential effects during the Proposed Development's operational phase include direct habitat loss, disturbance and displacement of species, and bird fatalities and/or injuries through collisions with turbines.

During operation, likely effects from habitat loss and fragmentation, and for disturbance and displacement for different bird species is deemed Negligible and Not Significant.

Assessment of operational effects for Key Ornithological Features is informed by species-specific collision risk modelling where appropriate. The effect for different bird species in the collision modelling is determined to be Negligible to Minor, and Not Significant.

Potential effects on ornithological features during the decommissioning phase are anticipated to be broadly similar in nature to those experienced during the construction phase, albeit generally of reduced magnitude and duration. Different bird species were assessed regarding habitat loss and fragmentation and deemed to be Negligible and Not Significant. The same determination was decided for disturbance and displacement.

Existing or proposed projects in the hinterland of this project have the potential to cumulatively impact on the local ecology, particularly through increased fragmentation of the landscape, increased habitat disturbance, barrier effects, intensification of collision or displacement impacts on sensitive bird species. Following consideration of the impact assessment, it is noted that the project in isolation will not result in any significant effects upon any of the identified KOFs that would be sensitive to impacts from developments in other areas. Non-target farmland bird species are the only identified KOF with the potential for significant effects, and they are unlikely to be significantly impacted by other wind farm developments and projects. No potentially significant cumulative disturbance and habitat loss effects are expected.

No additive, antagonistic, or synergistic effects have been identified with regard to habitat loss, displacement, and collision mortality.

To reduce potential impacts, mitigation measures are incorporated into the construction and operation of the Proposed Development. A Biodiversity Enhancement Management Plan (BEMP) has been produced to provide a framework for the conservation and enhancement of ecological features during the operation stage and beyond, and to ensure the site is managed in the interests of biodiversity and that ongoing management is successful in achieving a biodiversity net gain. A monitoring plan to ensure the mitigation and enhancement plans are meeting their aims will be implemented also. An avian fatality monitoring programme will be implemented within the during the operational phase, which will confirm the accuracy of the collision risk modelling predictions that were made within this assessment.

Mitigation to reduce direct loss and fragmentation of habitat and disturbance and displacement of specie includes retainment of areas of greater habitat importance within the landscape design (e.g., waterbodies and woodland), minimisation of the extent of habitat loss during construction as much as is possible within the development design, selection of delivery routes which use existing built infrastructure wherever possible, with laying of cables underground, and presence of an Ecological Clerk of Works on site to oversee any ornithological issues during construction.

A habitat reinstatement and creation plan will also be implemented in proportion with the type and extent of habitat loss during construction. The locations of habitat reinstatement and enhancement measures will take into

consideration the risk of effects from collisions with wind turbines, with creation of features which could bring target species into proximity with wind turbines to be avoided. It will include wet grassland, hedgerows and watercourse buffering.

### 3.4 Water

An impact assessment was carried out to determine whether the Proposed Development is likely to have a significant adverse effect on the hydrology and hydrogeological aspects of the environment and to propose mitigation measures to reduce any potential negative impact. The assessment was based on information obtained from the Geological Survey of Ireland, the EPA; the Shannon River Basin Management Plan 2015-2018, site inspections, assessment of surface water quality and a detailed flood risk assessment.

The main hydrological feature is the Ahacronane River which flows from southwest to northeast across the site. The Lissatotan stream, which is a tributary of the Ahacronane River, rises in the north of the site and flows north joining the Ahacronane c. 2km north of the site. The Rathnagore Stream flows from west to east along a section of the southern site boundary towards the golf course and joins the Riddlestown Stream at the southeastern site boundary.

There are field drains along many of the internal field boundaries and in particular along the boundaries of individual land holdings. The drains are relatively deep and wide (typically 1-2m deep and wide). Part of the site where a bridge crossing will be constructed is at risk of flooding in 1:100-year flood events. The bridge crossing design has accounted for potential impacts associated with flood risk.

During the construction period, the Proposed Development has the potential to lead to impacts on hydrology and water quality unless appropriate mitigation is applied. New internal road construction will provide access to all 6 turbine locations and the substation location. The construction of new access tracks will require some additional drains and the removal of soil and diverting near-surface groundwater flow into the drains and channels.

During the operational phase, the main potential hydrological impact of the development is a slight increase in run-off from a storm event to the streams within the site due to a minor decrease in ground permeability at the turbine hardstands and substation. The potential impacts associated with decommissioning of the proposed development will be similar to those associated with construction but of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works.

On implementing identified mitigation measures, the proposed development will have an adverse, not significant temporary and localised impact on hydrology and surface water during the construction stage, while groundwater quality is assessed to have a neutral, not significant, temporary and localised impact. It will have an adverse, not significant, long term residual impact on hydrology during the operational stage and will have a neutral, imperceptible, long term and localised impact on surface and groundwater quality during the operational stage.

### 3.5 Land and Soils

The Land and Soils chapter describes any prospective effects on land and soils due to the Proposed Development.

The proposed wind farm location is rural in nature, with landcover comprising mainly agricultural land, farm holdings and residential dwellings. The topography of the area is relatively flat with elevations ranging between 46 to 56m above ordnance datum. The terrain gently slopes upwards towards the southwest. Current land use is predominately improved grassland area (Figure 3-1).

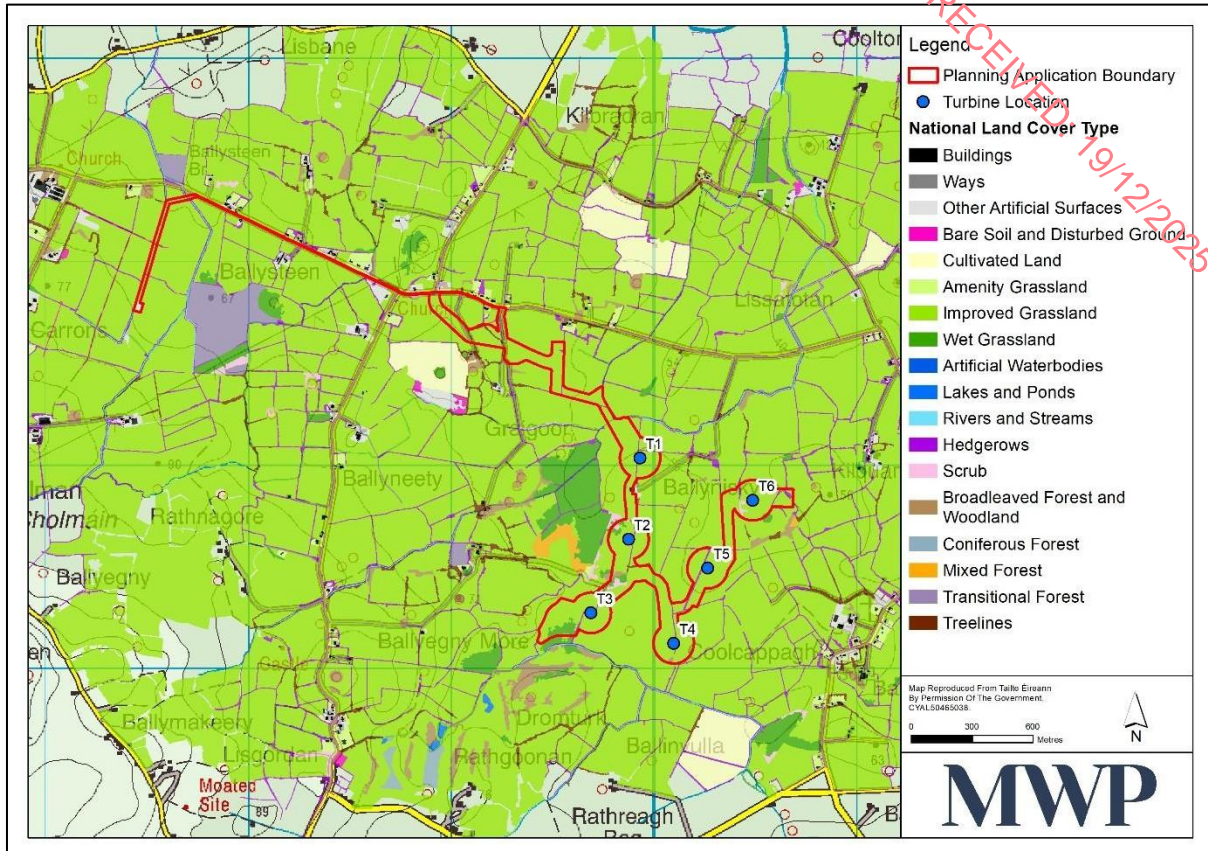


Figure 3-1: Existing Land Cover

The project area is underlain by the Upper Carboniferous rocks of the Shannon Group which were deposited in the extensional Shannon Basin. The two main rock formations are the Rathkeale Formation within the northern portion and the Visean Limestone (undifferentiated) within the southern portion of the proposed development site. These rocks consists of limestones indicative of the phase of deposition when Ireland was covered in a warm, shallow sea. The northern and southern areas outside of the site are dominated by Waulsortian Limestone which is known to be karstic. The area West of the site is dominated by the Clare Shale Formation, while the area to the northwest of the site is dominated by Durnish Formation and Volcanic Rocks (Figure 3-2). The predominant soil type at the majority of the site is a well-drained mineral soil.

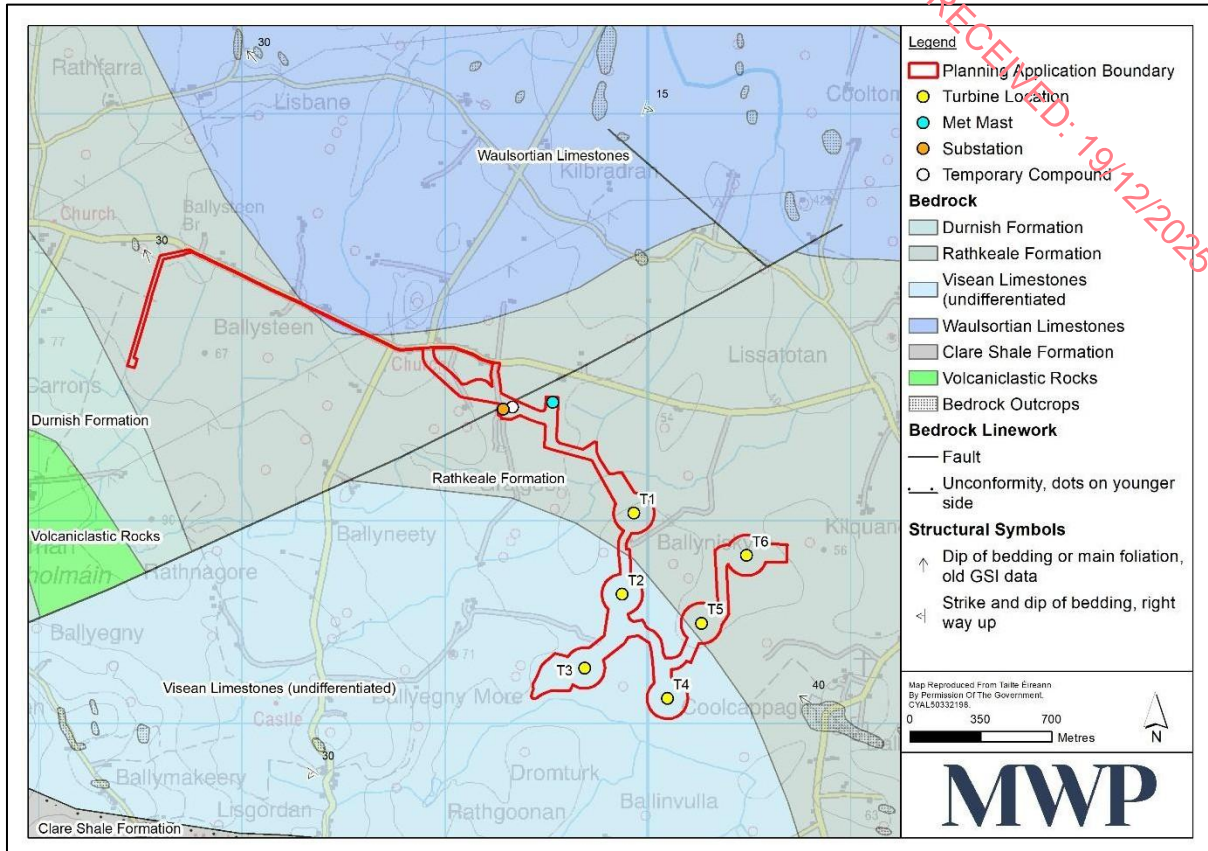


Figure 3-2: Local Geology

The wind farm development will involve the removal of soil, subsoil, and bedrock for facilitating access roads and hardstands for the turbines. The aggregates (rock, stone, gravel, sand) used during construction of the roads, hardstands, and substation will be sourced from local quarries and concrete and additional aggregate materials will be sourced from authorised facilities.

With the implementation of specific mitigation measures, no significant effects on the land, soil and geology of the site of the Proposed Development or along the grid route will occur during construction, operation, or during decommissioning due to correct procedures and outlined mitigations being in place.

The assessment also confirms there will be no cumulative effects on land soil and geology environment as a result of the Proposed Development.

### 3.6 Noise and Vibration

The assessment of environmental noise impacts requires that noise emissions of any proposed development are compared with the existing ‘background’ noise levels. Existing conditions are typically measured by means of a noise survey and the expected noise emission levels are predicted by calculations.

Noise emissions from wind turbines require more comprehensive analysis due to the fact that their noise emission levels vary with wind speed and wind direction. The assessment is further complicated as the background noise levels also changes as wind speed increases (due to factors like wind-induced noise in foliage).

*Wind Energy Development Guidelines (2006)* issued by the Irish Department of Housing, Local Government, and Heritage provide a framework for wind energy development in Ireland. The guidance addresses aspects such as

shadow flicker, community engagement and grid connections and sets noise limits with the aim of balancing wind energy development with the well-being of communities and the environment.

A summary of the operational noise limits from this guidance is as follows:

- During the Daytime, the noise limit is 45dB or 5dB above the background (whichever is higher), and
- During the Night-time, the noise limit is 43dB or 5dB above the background (whichever is higher).

In relation to schools, the Department of Education and Skills (DoES) guidance document *SDG 02-05-03 Acoustic Performance in New Primary & Post Primary School Buildings* recommends a limit for Indoor Ambient Noise Levels (IANLs) of 35dB for classrooms. It states that this can be achieved without additional treatments if the external noise level is no more than 51dB. Evidently the criteria for residential locations is considerably more stringent.

The noise assessment of the Proposed Development has been comprehensively evaluated following best practice, national and international guidance and methodologies for the construction, operational and decommissioning stages.

A thorough background noise survey was conducted to quantify the current conditions at representative locations over the operational wind speeds of the turbines. The construction/demolition programme has been assessed at all stages and the operational noise levels carefully predicted, including the cumulative effects of other existing wind farm developments. A conservative, worst-case approach was adopted throughout the assessment, and suitable uncertainty factors considered.

It was demonstrated that the construction/demolition phases will result in short-term elevated noise levels at the closest dwellings but will remain within appropriate noise limits. Nevertheless, a comprehensive range of mitigation measures will be deployed to minimise any adverse impact.

The design of the site layout, the type of turbines and the intervening topography is such that the predicted operational noise levels of the wind farm are not expected to exceed the *Wind Energy Development Guidelines'* daytime or night-time noise limits.

In addition, suitable monitoring and mitigation measures are available to assess the actual noise impact were the scheme to proceed and thus ensure compliance.

Vibrations are limited to the construction phase of the Proposed Development and the grid connection route. Regarding piling, should it be required, based on the large distances between locations where the piling may take place and the nearest noise sensitive location, it is considered that no significant impact will be experienced. There are no expected sources of vibration associated with the operational phase of the Proposed Development.

In relation to the decommissioning phase, the criteria and limits applied during the construction phase of the Proposed Development would be applicable for both noise and vibration, as similar tools and equipment will be used.

### 3.7 Cultural Heritage

An assessment of the archaeological and cultural heritage value of the site and the direct and indirect likely significant effects on archaeological features and heritage assets resulting from the construction, operation and decommissioning of the Proposed Development was undertaken.

Potential direct physical impact during the construction phase to National Monuments, Recorded monuments, Protected Structures and Cultural Heritage Sites was assessed.

No National Monuments in State Ownership/Guardianship are located on or adjacent to the proposed grid connection, therefore there will be no direct impacts to these aspects of the archaeological resource and no mitigation is required.

There are no recorded archaeological sites located on the footprint of any element of the proposed development site. There are fifteen recorded monuments within the EIA study area of the BWF, situated between 120m-300m from the proposed turbines and four recorded monuments, located within a 200m wide corridor of the proposed grid connection route. The Proposed Development has been designed to avoid direct impacts on all those monuments where possible. Proposed mitigation measures will be to establish physical exclusion zones around monuments in vicinity (ringfort LI019-132, enclosure LI019-270, ringfort LI028-182, ringfort LI028-043, ringfort LI028-039 and ringfort LI028-038) under archaeological supervision prior to construction.

There are no Protected Structures or structures/items listed in the NIAH (National Inventory of Architectural Heritage) located within the proposed development site or within 100m corridor of the grid connection cable route thus there will be no direct physical impact to any and no mitigation required.

Potential direct physical impact on previously unknown, sub-surface archaeological features during construction phase was assessed and classified as *'moderate'*. There may be also direct physical impact on previously unknown, sub-surface archaeological features in proximity of recorded graveyard LI019-131002 where impact was classified as *'slight'*. Proposed mitigation measures will be to undertake archaeological testing followed by archaeological monitoring of all groundwork's associated with the construction of turbine hardstands, substation, compound, internal grid connection / access tracks and temporary access track as well as targeted sections of the external grid connection.

Physical impacts during the construction phase to cultural importance heritage sites were assessed and classified from *'not significant'* to *'moderate'*. Moderate impact was assessed to:

- (1) Townland (Graigoor-Ballynisky)/parish (Kilbradran-Clonagh)/Barony (Shanid-Connello Lower) boundary;
- (2) Kilbradran- Graigoor townland boundary; and
- (3) Ballyegny More-Ballynisky townland boundary.

Slight impact was assessed to:

- (1) Vernacular structure of which potential sub-surface remains at the location of proposed T3;
- (2) Dunmoylean-Ballysteen townland boundary (stream) situated on the proposed grid connection route.

All groundwork's associated with cuttings through the townland / parish/ barony boundaries will be kept to a minimum, cutting locations of these boundaries will be archaeologically recorded and all boundary cuttings shall be archaeologically monitored.

Indirect impact describes the presence of the development during the operation phase when they may cause change to the surroundings of the archaeological or architectural heritage resource was assessed, however, there is no mitigation proposed for the operational phase of the project.

Potential cultural visual impact was assessed to National Monuments within 10km radius zone from the Proposed Development and 3km radius study zone was undertaken to assess impact on Recorded Monuments and NIAH structures (including Recorded Protected Structures).

Cultural visual impact on National Monuments was classified from: *'slight'* - (Desmond Hall and Great Hall in Newcastle West town) to *'not significant'* (Askeaton Abbey and Castle and Ardagh Ringfort).

Potential cultural visual impact to Recorded Monuments within 3km zone (including monuments within EIAR study area) was classified from 'not significant', through 'slight' (44 monuments in total) to 'moderate' (6 monuments in total).

Potential cultural visual impact on NIAH structures including protected RPS structures was classified from 'not significant' to 'slight'. Slight impact was assessed to the two nearest RPS: (1) - Mangan's House and (2) - Ballyegny House.

In addition to heritage sites there will be 'slight' cultural visual impact on Waterville House situated c.180m NW from proposed turbine T6.

There will be no significant potential impacts on the archaeological, architectural and cultural heritage environment during the decommissioning of the Proposed Development. Potential subsurface archaeological issues will have been adequately resolved by the mitigation measures in advance of the construction phase of the project. All townland / parish / barony boundaries impacted by the construction of the Proposed Development will revert to their pre-construction phase.

Cumulative impact consisted of evaluation of other wind farm projects within a 20km radius of the proposed BWF development was considered in order to assess potential construction phase cumulative impacts and assessed as 'slight'. There is no mitigation proposed for the cumulative impacts of the project.

### 3.8 Air and Climate

The potential effects of the Proposed Development on local air quality and climate have been assessed as part of the EIAR and the effects of construction and operation have been considered. Decarbonisation is critical to reducing rising global temperatures and the resultant adverse impacts to the Planet and its occupants.

The Proposed Development will facilitate decarbonisation objectives at local and national levels as set out in the 2023 National Climate Action Plan and the 2022-2028 Limerick Development Plan which states that Limerick City and County Council will facilitate the development of energy sources which will achieve low carbon outputs.

Representative Environmental Protection Agency ambient air quality data has been used to characterise the existing air quality in the area. The air quality for the region where the development is proposed (Askeaton, Co. Limerick – Station 74) is currently ranked as '1 - Good'.

There is the potential for dust disturbance to occur during the construction phase. Using the National Roads Authority (NRA) criteria, the construction of the wind farm can be characterised as a moderate-sized construction site. Therefore, dust is unlikely to cause an impact at sensitive receptors beyond 50m of the source, with standard mitigation measures in place. Due to the separation distances between the nearest dwellings and major construction element, dust is unlikely to be a significant impact at the nearest dwellings. The movement of machinery, construction vehicles and the use of generators during the construction phase will also generate exhaust fumes. Considering the separation distance to nearby dwellings, in addition to strict adherence to best construction practices, the effect on local air quality will not be significant.

Dust and emissions from the construction works will likely result in a temporary, negative and imperceptible effect on sensitive receptors near construction works areas for the duration of the construction phase. Standard best practice is adhered to during the construction phase in order to minimise fugitive dust emissions in particular.

It is not expected that any negative impacts to air quality or the climate will occur during the operational phase and therefore no mitigation measures are required.

There will be some CO<sub>2</sub> losses associated with the turbine life (manufacture, construction and decommissioning), and the disruption of the natural on-site natural CO<sub>2</sub> sink resources. However, this will be quickly repaid once the wind farm is operational. The calculated payback CO<sub>2</sub> period is 0.8 years.

Once operational, there will be no direct emissions to the atmosphere from the Proposed Development. The electricity generated will displace electricity that would otherwise have been generated by burning fossil fuels. The Proposed Development will assist Ireland's CO<sub>2</sub> reduction commitments under the Paris Agreement as well as facilitate decarbonisation objectives, at local and national levels as set out in the National Climate Action Plan 2023 and the 2022-2028 Limerick Development Plan. The Limerick Development Plan (Renewable Energy Designation) has designated the site as a strategic and acceptable in principle area for wind energy generation.

Overall, the Proposed Development is fully aligned with current energy and climate policy, aims and objectives, which primarily seek to increase the production of electricity from renewable sources.

### 3.9 Material Assets

This assessment identifies Material Assets within the vicinity of the proposed development site or those that will be utilised by the development. Material assets assessed include traffic and transport, grid capacity and electrical infrastructure, gas, aviation, telecommunications, water and wastewater infrastructure and waste management.

#### 3.9.1 Road and Traffic

Access to the site will be via the Local Road network with two site entrances. A permanent site entrance utilising an existing farm access road will be located on the L1219 local road to the North of the site for access during the operational life of the wind farm. A temporary site entrance also on the L1219 but further to the West of the permanent entrance will be used for the construction phase only. Construction activities associated with the Proposed Development will adapt working practices to ensure the safety and convenience of all road users during the construction of the development as detailed previously. This includes pedestrians, cyclists and other traffic. Once operational, the site will require periodic maintenance, which would generate a relatively low volume of vehicles. The removal of the wind turbines during the decommissioning phase would be on a similar basis and traffic volume to the construction of the wind farm.

#### 3.9.2 Grid Capacity and Electrical Infrastructure

Existing electricity infrastructure includes Carrons windfarm substation approximately 2.5km northwest of the Proposed Development. Consultation with Electricity Supply Board's Dial Before You Dig service has identified a medium voltage (10 to 20kV) and 38kV overhead line northwest of the proposed site development.

To facilitate a connection to the National Electricity Grid (NEG) for the six (6) No. turbines, it is being proposed that approximately 2.54km of 38kV underground electrical cable will be installed along the L1219 local road to the north extending west to connect the wind farm substation to an off-site substation at Carrons Wind Farm. Alternatively, a loop-in connection will be used on site, to a 38kV line traversing the site within the planning application boundary. During decommissioning, underground cables connecting the turbines to the selected substation will be cut back and left underground. The cables will not be removed if an environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them in situ.

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### 3.9.3 Gas

Natural gas is supplied via underground interconnecting pipelines throughout the Country. The natural gas network in Ireland is run by Gas Networks Ireland.

Following consultation with Gas Networks Ireland DBYD, there are no identified gas network utilities within the proposed development site boundary or surrounding areas.

### 3.9.4 Telecommunications

In the event of interference to television and telecommunication services arising from the wind farm development, the applicant will work with telecommunication providers to remedy any issues of interference to affected communication links. Appropriate mitigation measures can be implemented such that there will either be an imperceptible effect, or no effect, on surrounding reception as a result of the Proposed Development, with the solution to interference with TV reception or communication links dependent on where the residence receives signal from.

As standard practice, a signed Protocol between the developer and 2rn will be put in place, in which the developer will be responsible to resolve any issue of interference with television reception as a result of the Proposed Development.

An impact analysis indicated that a Vodafone point to point (PTP) microwave radio link crosses over the proposed development and may be potentially impacted. A mitigation measure of re-routing the service from an alternative Vodafone Feeder/POP site was put forward to Vodafone, who agreed to the proposal. Part of the agreed proposal was that the developer would cover the mitigation cost. Therefore, there will be no impact to telecommunication links as a result of the development

### 3.9.5 Aviation

The IAA/AirNav Ireland has provided general observations that in the event of planning the applicant should contact the IAA to agree an aeronautical warning light system, provide as-constructed coordinates with ground and blade tip height elevations, at each turbine location, notify the authority of the intention to commence crane operations in at least 30 days in advance. If the site is to be decommissioned, cranes of similar size to those used for construction will disassemble each turbine.

### 3.9.6 Water and Wastewater Infrastructure

Consultation to identify water infrastructure within the proposed site location was completed with Irish Water in April 2022. A review of the data provided by Irish Water has confirmed that there were no existing watermains within the footprint of the proposed wind farm however there is distribution watermains which do exist along the roads where the grid connection route may pass. Pre-construction surveys will be completed to avoid disturbance to existing watermains.

All construction phase and operation phase wastewater to be taken off-site by an authorised waste contractor and brought to an authorised waste facility.

### 3.9.7 Waste Management

Construction phase waste will be stored in the construction compound and collected at the end of the construction phase and taken off site to be reused, recycled and disposed of in accordance with best practice

procedures at an approved facility. All waste to be removed from site will be undertaken by authorised waste contractors and transported to an authorised facility in accordance with best practice.

### 3.10 Landscape and Visual

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity. The significance of the effect is a judgement based on the sensitivity of the receptor, combined with the magnitude or degree of change. This process is the same for landscape and visual effects. The assessment of landscape and visual effects included a desktop study, review of the proposed development drawings and visualisations, and a number of site visits.

There are no landscape designations in the vicinity of the site and the area is categorised as a 'Preferred Area' for wind energy. The significance of the landscape effect is considered to range from 'Slight' to 'Moderate' in the vicinity of the site. There are already turbines and energy structure that are part of the landscape and will now become a more pronounced presence in the immediate vicinity of the site due to the turbines, and more locally due to the substation. The effects range from 'Neutral' to 'Adverse'. The proposed cable route of Grid Option A will be underground and not have any visual impacts at the operational stage of the Proposed Development. Grid Option B will be contained within the planning boundary and will be connected via underground cables to the proposed substation on site. The end mast poles erected to loop into the existing 38kV line already transecting the site will be similar to those already present on site.

### 3.11 Interaction of the Foregoing

There is potential for interactions between one aspect of the environment and another which can result in direct or indirect impacts, and which may be positive or negative.

A matrix has been generated to summarise the relevant interactions and interdependencies between specific environmental aspects (Refer to Table 3-1). It contains each of the environmental topics, which were considered as part of this environmental impact assessment, on both axes.

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**Table 3-1: Matrix of Impacts**

	Population and Human Health inc Shad. Flicker	Biodiversity and Ornithology	Water	Land and Soils	Noise and Vibration	Landscape and Visual	Cultural Heritage	Air Quality and Climate	Material Assets (incl traffic)	Traffic and Transport
Population and Human Health inc Shadow Flicker			C	C	C/O/D	C/O/D		C/O	C	C/D
Biodiversity and Ornithology			C	C	C/O/D			C/O	C	
Water	C	C		C						
Land and Soils	C/D	C/D	C			C	C	C		C
Noise and Vibration	C/O/D	C/O							C/O/D	C/D
Landscape & Visual	C/O			C			O			
Cultural Heritage				C		O				
Air Quality and Climate	C/O	C		C					C/O	
Material Assets	C/O	C						C/O		C
Traffic and Transport	C/D	C/D			C/D	C/D		C/D	C/D	

C	Construction Phase Effect
O	Operation Phase Effect
D	Decommissioning Phase Effect
	Interaction Occurs
	No Interaction