

GORTYRAHILLY WIND FARM

SCREENING FOR APPROPRIATE ASSESSMENT

AND

NATURA IMPACT STATEMENT

August 2022

Prepared for

Gortyrhilly Wind DAC

by

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1 INTRODUCTION

BioSphere Environmental Services was commissioned by Jennings O'Donovan Consulting Engineers, on behalf of Gortyrahill Wind DAC, to prepare a report to inform screening for appropriate assessment and a Natura Impact Statement (NIS) for the proposed Gortyrahill Wind Farm project.

1.1 Site Description

The proposed Gortyrahill Wind Farm site is located approximately 4 km southwest of the village of Ballyvourney in west County Cork (see **Figure 1**). The site extends to 666.71 ha, with approximate grid reference W1672.

The underlying hard geology within the study area is sandstone. The soil is largely peat based, which naturally supports a mix of blanket bog and heath habitats. Rock outcrop occurs through much of the site.

Much of the site lies between the 300 m and 400 m contour lines, with the highest point at Carrickalougha rising to 423 m. The site falls to below the 300 m contour in the eastern part, with a minimum of approximately 220 m.

The Development lies within three sub-catchments, all tributaries of the Lee (see **Figure 2**). In the northern and main part of the site, there are three tributaries of the Douglas River which flows in to the Sullane River downstream of Ballyvourney. The Sullane flows into the River Lee within the Inishcarra Reservoir downstream of Macroom. In the southeast, the site drains to the headwaters of the Toon River which flows directly into the Lee, while in the south-west the Abha Bhun Silinn also flows directly into the Lee. The watercourses within the site itself are small 1st order tributaries which have high gradients and do not provide suitable habitat for fish or larger aquatic organisms.

The main land uses within the site are afforestation (approximately 156 ha) and grazing of livestock (sheep and cattle).

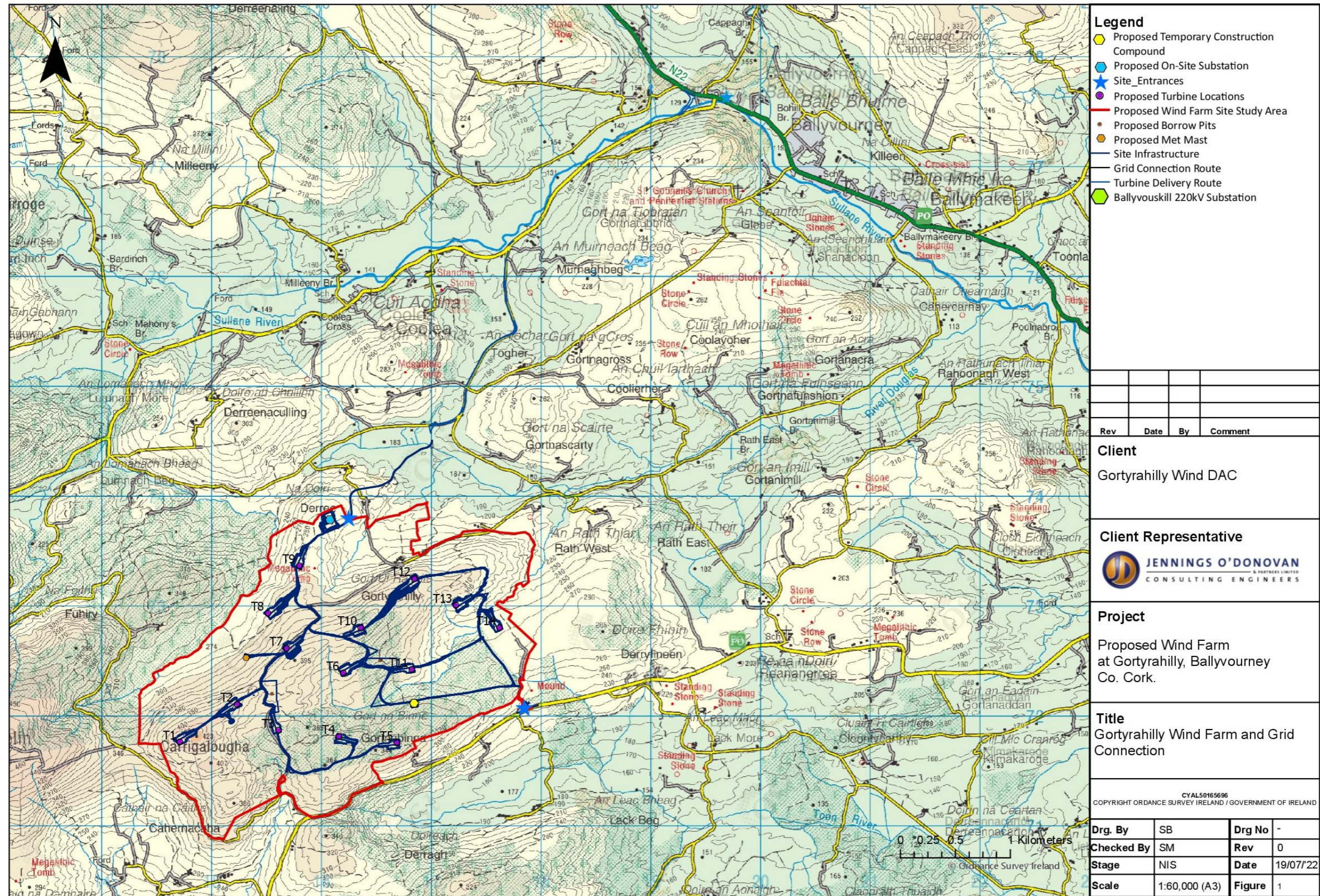


Figure 1. Location of site for proposed wind farm at Gortrahilly.

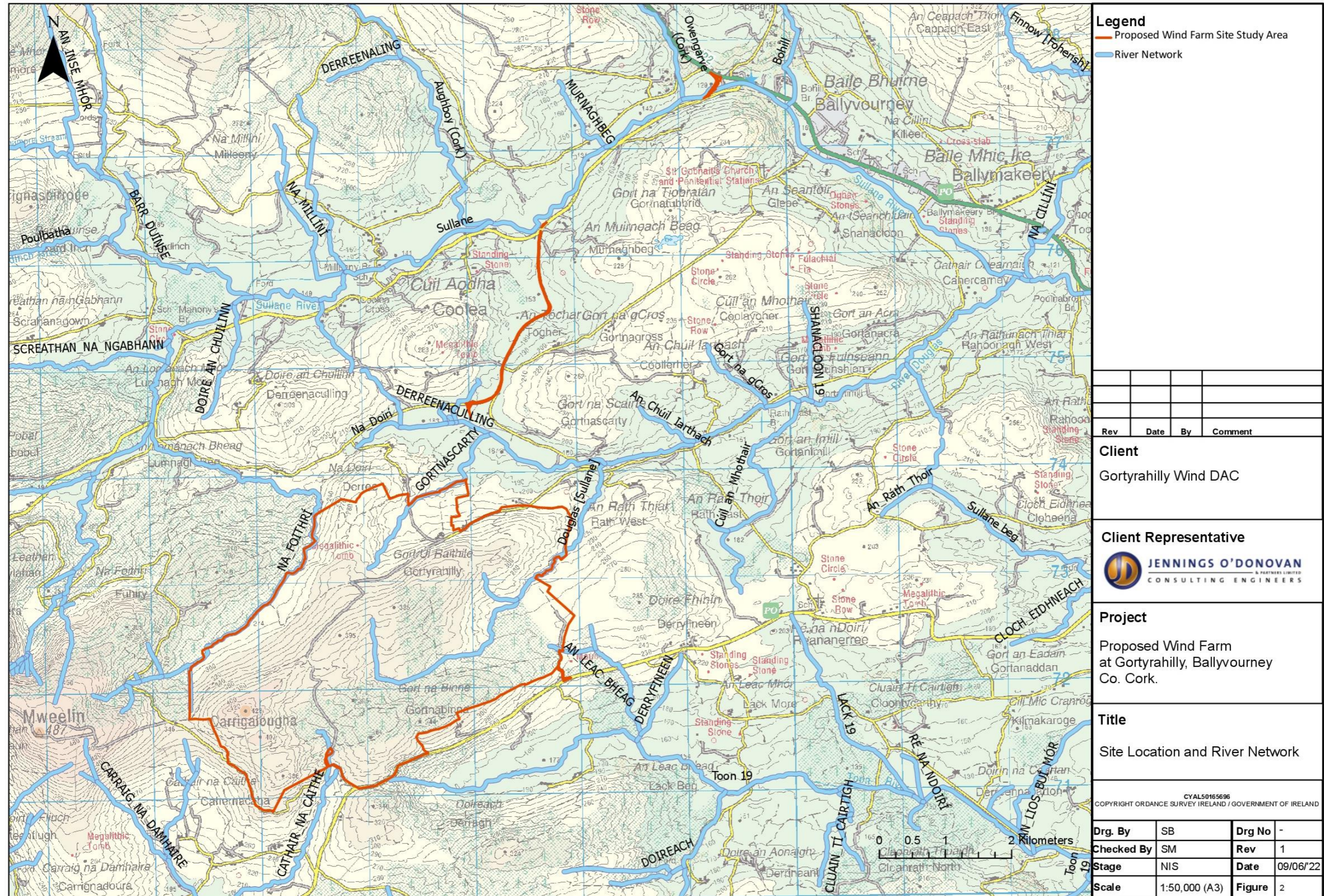


Figure 2. Site outline showing main river network.

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The proposed Grid Connection Route (see **Figure 3**), which extends for 27.8 km, is dominated by forest tracks and public roads. The grid connection route extends into the catchment of the Clydagh River, which becomes the River Flesk in its lower reaches downstream of its confluence with the Loo River. The Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC extends to include the Clydagh River upstream to its upper reaches on the county boundary. The Grid Connection Route will cross a number of minor tributaries of the Clydagh as it follows the existing forestry trail network between the N22 and the county boundary northeast of Mullaghanish, where it leaves the catchment. The tributaries rise on the northern flanks of the Derrynasaggart Mountains and are mostly minor streams with steep gradients upstream of the forestry track.

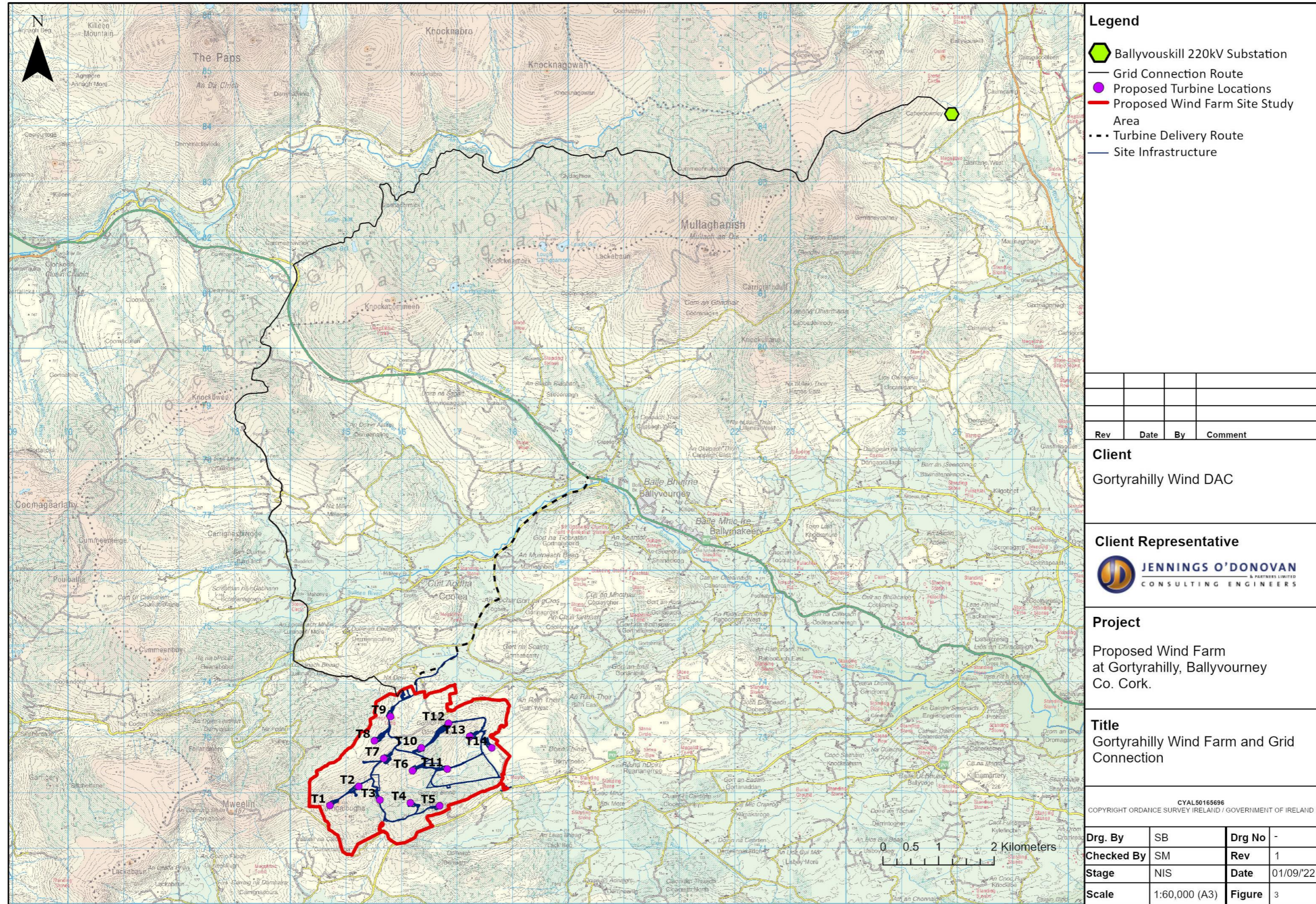


Figure 3: Map showing the location of the proposed Gortrahilly Wind Farm and Grid Connection.

1.2 Overview of the Proposed Development

Permission is being sought by the Developer for the construction of 14 No. Wind Turbines, a meteorological mast, an on-site substation and all ancillary works, works along the turbine delivery route and the construction of an underground grid connection to Ballyvouskill 220kV GIS substation, Co. Cork.

The Development will consist of the following main components:

- Construction of 14 No. wind turbines with an overall ground to blade tip height ranging from 179 m to 185 m inclusive. The wind turbines will have a rotor diameter ranging from 149 m to 155 m inclusive and a hub height ranging from 102.5 m to 110.5 m inclusive.
- Construction of permanent turbine hardstands and turbine foundations.
- Construction of one temporary construction compound with associated temporary site offices, parking areas and security fencing.
- Installation of one (35-year life cycle) meteorological mast with a height of 110 m and a 4 m lightning pole on top.
- Development of two on-site borrow pits.
- Construction of new permanent internal site access roads and upgrade of existing internal site access roads, to include passing bays and all associated drainage infrastructure.
- Development of an internal site drainage network and sediment control systems.
- Construction of 1 no. permanent 110 kV electrical substation including 2 no. control buildings with welfare facilities, all associated electrical plant and equipment, security fencing and gates, all associated underground cabling, wastewater holding tank, and all ancillary structures and works;
- All associated underground electrical and communications cabling connecting the wind turbines to the wind farm substation.
- Ancillary forestry felling to facilitate construction of the development.
- All works associated with the permanent connection of the wind farm to the national electricity grid comprising a 110 kV underground cable in permanent cable ducts from the proposed, permanent, on-site substation, in the townland of Gortyrahill and onto the townlands of Derree, Derreenaculling, Lumnagh Beg, Reanabobul, Lumnagh More, Scrahanagown, Bardinch, Milleeny, Inchamore, Derreenaling, Derryreag, Cummeenavrick, Glashacormick, Clydaghroe and Cummeennabuddoge to the existing Ballyvouskill 220 kV Substation in the townland of Caherdowney.

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- All associated site development works including berms, landscaping, and soil excavation.
- Improvement of an entrance to an existing private road off the L-7405-0 local road to include localised widening of the road and creation of a splayed entrance to facilitate the delivery of abnormal loads and turbine component deliveries.
- Improvement of an existing site entrance off the L-3402-36 local road to include removal of existing vegetation for visibility splays to facilitate the use of it for the delivery of construction materials to the site.
- Upgrade works on the turbine delivery route to include the following:
 - Construction of a temporary bridge over the Sullane River to allow access to the L-3400-79 from the N22 in Ballyvourney for the duration of the construction works.
 - Localised widening of the L-3405-0 road to a width of 4.5 m, from the junction with the L3400-7 road to the junction with the L-7405-0 road.
 - Localised widening of the L-7405-0 road to a width of 4.5 m, from the junction with the L-3400-0 to the entrance to an existing private road off the L-7405-0.
 - The construction of a temporary access road off the N22 in the townland of Cummeenavrick to facilitate 180 degrees turning manoeuvre by the turbine delivery vehicles.

A 10-year planning permission and 35-year operational life from the date of commissioning of the entire wind farm is being sought. This reflects the lifespan of modern-day turbines.

A permanent planning permission is being sought for the Grid Connection and substation as these will become an asset of the national grid under the management of EirGrid and will remain in place upon decommissioning of the wind farm.

1.3 Purpose of the Report

The purpose of the report is to provide the information required to assist An Bord Pleanála, (ABP) the competent authority, to undertake a screening for appropriate assessment and, if considered necessary, an appropriate assessment. This will determine the effects, if any, on European sites (also known as Natura 2000 Sites) of the proposed Gortyrhilly Wind Farm Project. The potential impacts on European sites, both as a result of the proposed development and in-combination with other plans and projects, are appraised in this report.

1.4 Project Team

This report was prepared by Dr Brian Madden, is informed by the ecological survey data and relevant technical reports which accompany the planning application, and a comprehensive literature review. The ecological surveyors and authors of supporting information for the NIS are listed in Table 1 below.

Table 1: Details of personnel involved in supply of supporting information for preparation of the NIS.

Project Team Member	Qualifications / Expertise	Role
EirEco Environmental Consultants – Paul Murphy	MSc Environmental Science Diploma in Aquatic Biology, CEnv MCIEEM Member of the Institute of Fisheries Management.	Aquatic field surveys and prepared aquatic ecology chapter of EIAR.
Ross Macklin (Triturus Environmental Ltd.)	BSc PhD	Electrofishing
Dr John Conaghan	BSc., PhD, MCIEEM –	Habitat surveys
Dr Jonathon Dunn (Fehily Timoney Consultants)	BA (Hons) Natural Sciences (Zoology) from the University of Cambridge, MSc in Ecology, Evolution and Conservation from Imperial College London PhD in Avian Ecology from Newcastle University.	Bird surveys 2019/20 Bat static detector surveys in 2019/20
Sinead Clifford (Fehily Timoney Consultants)	BA (Hons) from Institute of Technology Tralee. Certificate in Ecological Consultancy from Acorn Ecology	Bat static detector surveys in 2019/20 Analysis of bat calls
Dr Patrick Crushell	BSc MSc PhD MCIEEM CEcol	Kerry slug survey and baseline reporting.
John Curtin	BSc in Environmental Science from NUI Galway.	John carried out bat surveys at Gortyrahilly Wind Farm in 2021 and input to the preparation of the biodiversity chapter.

1.4.1 Statement of Authority

Brian Madden (BA. Mod. Hons., Ph.D., MCIEEM) qualified in Natural Sciences in the early 1980s and earned a doctorate degree from NUI in 1990 for research in peatland ecosystem processes. Brian has worked on a wide range of wind farm and energy related projects since the late 1990s, from the planning stage through to construction and post-construction monitoring. Examples of projects include Grousemount Wind Farm, Cos. Cork/Kerry, Oweninny Wind Farm Phase 1 & Phase 2, Co. Mayo, Castlepook Wind Farm, Co. Cork, Letteragh Wind Farm, Co. Clare, Eglisk Wind Farm, Co Tyrone, Carrickatane Wind Farm, Co. Derry.

1.5 Relevant Legislation and Policy

The requirements for an appropriate assessment are set out *under Article 6 of the EU Habitats Directive (92/34/EEC)*, transposed into Irish law through the *European Union (Birds and Natural Habitats) Regulations 2011-2021* and the *Planning and Development Act, 2000 - 2021*.

1.6 Regulatory Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna, better known as “The Habitats Directive”, provides the framework for legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC) (better known as “The Birds Directive”).

Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (see below).

“Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public”

This provision has been implemented in the context of the planning code under Part XAB of the Planning and Development Acts, 2000 - 2022.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage and designing the project in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point, where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, then it can only proceed if no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test) under Article 6 (4) of the Habitats Directive. Compensation measures are required for any remaining adverse effect at this stage.

1.7 Stages of the Appropriate Assessment (AA)

There are up to four successive stages involved in the Appropriate Assessment process¹. The outcome at each stage determines whether the next stage in the process is required. The following describes each of the four stages:

Stage 1 – Screening

The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in-combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for An Bord Pleanála (the Board) to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment (AA) has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether a Stage Two AA must be undertaken by the competent authority on the implications of the proposed development for the conservation objectives of a European site. Therefore,

¹ Department of Environment, Heritage and Local Government (2010 revision). *Appropriate Assessment of Plans and Projects in Ireland*. Guidance for Planning Authorities.

where significant effects are likely, uncertain or unknown at screening stage, a second stage AA will be required.

Stage 2 – Appropriate Assessment

A Stage Two AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority (in this case, the Board) of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted, in summary:

(i) must identify, in the light of the best scientific knowledge in the field, all aspects of the proposed development which can, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;

(ii) must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and

(iii) may only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where the Board decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of the identified potential effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three and, if necessary, stage four.

Stage 3 – Assessment of Alternatives

This stage of the potential process arises where adverse effects on the integrity of a European site cannot be excluded and examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site.

Stage 4 – Imperative Reasons of Overriding Public Interest (IROPI)

This is the derogation process of Article 6(4), which examines whether there are imperative reasons of overriding public interest [IROPI] for allowing a project to proceed where adverse effects on the integrity of a European site have been predicted. Compensatory measures must be proposed and assessed as part of this stage.

2 METHODS

Screening determines whether appropriate assessment is necessary by examining:

1. Whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a Natura 2000 site;
2. Whether it is possible that the project may have a significant effect on a Natura 2000 site, either alone or in combination with other projects or plans, in view of the site's conservation objectives.

Screening involves the following:

- i. Description of plan or project;
- ii. Identification of relevant Natura 2000 sites, and compilation of information on their qualifying interests and conservation objectives;
- iii. Assessment of likely effects – direct, indirect and cumulative – undertaken on the basis of available information as a desk study or field survey or primary research as necessary.

The approach to screening is likely to differ somewhat between plans and projects, depending on scale and on the likely effects, but the following should be included:

1. Any Natura 2000 sites within or adjacent to the plan or project area.
2. Any Natura 2000 sites within the likely zone of impact of the plan or project. A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al. 2006). For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in-combination effects.
3. Natura 2000 sites that are more than 15 km from the plan or project area depending on the likely impacts, and the sensitivities of the ecological receptors, bearing in mind the precautionary principle. In the case of sites with water dependent habitats or species, and a plan or project that could affect water quality or quantity, for example, it may be necessary to consider the full extent of the upstream and/or downstream catchment.

The “Guidance for Planning Authorities” (Department of Environment, Heritage and Local Government) notes the following in section 3.2.3 “Natura 2000 Sites”:

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“The second stage (of the AA Screening process) is an examination of what Natura 2000 sites might be affected. These sites should be identified and listed, bearing in mind the potential for a plan or project, whether it is within or outside a Natura 2000 site, to have direct, indirect or cumulative effects, and taking a precautionary approach so that a site is included if doubt exists”.

3 DETAILED PROJECT DESCRIPTION

The Development, is comprised of 14 No. proposed turbines, one met mast and associated ancillary infrastructure (Turbine Foundations, Site Access Roads, Turbine Hardstands, drainage infrastructure etc.) (**Chapter 2: Project Description**). The Development will be connected to the national grid at Ballyvouskill Substation. The Grid Connection Route is approximately 27.8 km and comprised of wind farm / forest tracks (20 km), public roads (6.8 km) and ESB access track (1 km). The Grid Connection cable will be buried, with intermittent cable joint bays and other ancillary infrastructure where required.

The construction phase of the proposed Development will last approximately 21 months, with commissioning taking a further three months.

During the operation of the wind farm, the turbine manufacturer, the wind farm operator, or a service company will carry out regular maintenance of the turbines, substation and site infrastructure. Monthly routine inspection and preventative maintenance visits will be necessary to provide for the smooth and efficient running of the wind farm.

3.1 Project Description

3.1.1 Access to the site

There are two proposed site entrances. Site Entrance 1 is an existing site entrance to the north of the Site located off a private access road. Site entrance 2 is an existing Coillte site entrance located in the south-east of the Site off the L3402. The Turbine Delivery Route will utilise Site Entrance 1 and the Construction Haul Route will utilise Site Entrance 2. This is to aid with traffic management.

A temporary crossing of the Sullane River and the L-3400-79 was previously used for transportation of turbine components for the neighbouring Grousemount Wind Farm as the existing three-arch masonry bridge at Ballyvourney on the L-3400-79 Local Road and close to N22/L-3400-79 junction (see **Chapter 15: Traffic and Transportation**) was considered unsuitable for the passage of turbine components of the dimensions proposed. The proposed temporary bridge will be a single span structure which will be delivered to Site in a number of components for pre-assembly before being lifted into position using a crane (see JOD Drawing No. 6225-PL-810 and 6225-PL-811). The temporary bridge will remain in position until turbine commissioning is complete after which the deck will be removed and the Site reinstated. The bridge support piles will also be removed.

There will be nine service crossings, 170 No. culvert crossings and four watercourse/bridge crossings will be along the Grid Connection Route. There are seven proposed crossings of

land drains and natural streams/flushes along the internal Site Access Roads. All crossings are Clear Span Bridges. The bridges will be constructed with reinforced concrete and will join to the gravel Site Access Tracks. The bridges will range from 4.5 m to 16.0 m in width. Timber post and rail fencing will be included with galvanised chain link fence on the internal face. Further to consultation with Inland Fisheries Ireland (IFI), the proposed crossings have been designed using with Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters, 2016 as set out in detail in Management Plan 2 of the CEMP (Appendix 2.1).

3.1.2 Met Mast

The Met Mast will be a free-standing lattice type structure located in the north-west of the Site and will be required for the full operational duration of the Development. The Met Mast foundation will be 10 m by 10 m, with a depth of 2.25 m. The Met Mast will be linked to 110kV Substation via buried Internal Cabling for power and communication.

3.1.3 Electrical Substation, Control Building and Associated Compound

It is proposed to construct one 110kV electricity substation within the Site, to provide a connection point between the wind farm and the grid connection point at the existing Ballyvouskill 220kV Substation.

The overall compound will be enclosed by a 2.65 m high palisade fence and will contain a single control building, ancillary equipment, including the transformers, switch gear, fault protection, metering, car parking and other ancillary elements necessary for the operation of the Development. It will also include a container sized unit which can be used to accommodate a statcom (for grid reactive power compensation) or a harmonic filter for grid stabilisation.

Motion sensitive lighting only will be used. It is proposed to install a rainwater harvesting system as the source of water for toilet facilities. A potable water supply will be brought on site in bottles. Wastewater from the staff welfare facilities in the control building will be collected in a sealed storage tank, fitted with a high-level alarm. This is a device installed in a fuel storage tank that is capable of sounding an alarm, during a filling operation, when the liquid level nears the top of the tank. All wastewater will be tankered off-site by a licensed waste collector to the nearest wastewater treatment plant, Ballyvourney/Ballymakeera. There will be no on-site treatment of wastewater.

3.1.4 Grid Connection

The overall length of the grid connection between the substation and the existing Ballyvouskill 220kV GIS substation is 27.8 km, of which, 0.5 m is within the Development, and 7.0 km is located along the public road corridor. 19.9 km is located along the route of an existing forestry road. The remaining 0.4 km is located off road in third party lands.

Trenching and ducting will be carried out prior to the installation of the grid connection cable. The underground cable will be pulled through the installed ducts from a cable drum set up at one joint bay and using a winch system which is set up at the next joint bay, the cable will be pulled through.

3.1.5 Directional Drilling Works

Seven of the watercourse crossings for the wind farm will be constructed by means of directional drilling technology. Directional drilling is the practice of drilling holes in a horizontal direction for the laying of ducts which contain cables beneath features such as watercourse. Two separate excavations will be made either side of the watercourse to a depth of 2 metres to accommodate the directional drilling launch and reception pits.

3.1.6 Borrow Pits

Two borrow pits will be constructed as part of the Development. Borrow Pit A will be located north of T3 and will be 26,307 m² (111 m x 237 m). Borrow Pit B will be located north-west of T11 and will be 6,500 m² (130 m x 50 m). The borrow pits will provide 59,053 m³ excavated material to provide fill for the roads, hardstands, upfill to foundations and the temporary compound. The borrow pits will be excavated only as required. Where rock and fill material are available from the excavation of Turbine Foundations this material will be used first.

The use of on-site borrow pits will reduce the need to transport material to the Site. When the borrow pits are no longer required, they will be reinstated using any surplus inert material such as peat and subsoil from the Development, allowed to restore naturally and made secure using permanent stock proof fencing.

The rock will be extracted from the proposed borrow pits using two main methods, rock breaking and rock blasting. The primary method used to extract material from the borrow pits will be rock breaking.

3.1.6.1 Rock Breaking

Weaker rock will be extracted using a hydraulic excavator and a ripper. Where stronger rock is encountered and cannot be extracted using an excavator, then rock breaking equipment

will be employed. The broken-down rock will be loaded into mobile crusher using a wheeled loading shovel machine and crushed down into the correct grade for use in the construction of Site Access Roads and Turbine Hardstands.

3.1.6.2 Rock Blasting

Where rock is very strong and blasting is required, this is carried out using a mobile drilling rig which is used to drill vertical holes into the rock area that requires blasting. This is where explosives are used. It will take the drilling rig 3 to 4 days to drill the number of holes required for a single blast. A specialist engineer will be employed to determine the locations and depths of blasting required. The specialist blasting engineer will arrange for the correct amount of explosives to be delivered to the Site for each blast. The blast engineer will set the explosives and manage the blast. The rock generated from the blast will usually be the correct size to be loaded directly into the mobile crusher.

3.1.7 Onsite Drainage

The existing surface water runoff is contained within natural and artificial drainage channels that include stream and river waterbodies, drainage ditches, and other minor natural and artificial manmade drainage features. Tried and tested surface water management measures will be implemented during construction of the proposed Development. Such measures will include stilling ponds, sediment traps and attenuation ponds.

3.1.8 Decommissioning

The decommissioning phase of the proposed Development will involve the following:

- Removal of 14 No. wind turbines and concrete plinths.
- Removal of permanent meteorological mast.
- Removal of all associated underground electrical and communications cabling connecting the wind turbines to the wind farm substation. Ducting is to remain *in-situ*

All other elements of the proposed development will remain in-situ. The Site Access Roads and associated drainage systems will serve ongoing forestry and agriculture activity in the area. All other hard surfaced areas will be allowed to revegetate naturally. Cranes of similar size to those used for construction will disassemble each turbine using the same crane hardstands. The towers, blades and all above ground components will be removed from site and reused, recycled, or disposed of in a suitably licenced facility.

3.2 Identification of European Sites and Potential for Significant Effects

As a precautionary measure, all sites within 15 km of the project site are included in the preparation of this screening report. In addition, sites in Cork Harbour, which are hydrologically linked to the Gortyrahillly site, are also included.

Impacts are considered in the context of the **Source-Pathway-Receptor** (S-P-R) conceptual model for environmental management risk assessment.

A total of 13 Natura 2000 sites are identified that could potentially be affected by the proposed Gortyrahillly wind farm. These are as follows (and see **Table 2** and **Figures 4 & 5**):

- Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (code 000365)
- Mullaghanish Bog SAC (code 001890)
- The Gearagh SAC (code 000108)
- St. Gobnet's Wood SAC (code 00106)
- Blackwater River (Cork/Waterford) SAC (code 002170)
- Derryclogher (Knockboy) Bog SAC (code 001873)
- Glanlough Woods SAC (code 002315)
- Kilgarvan Ice House SAC (code 000364)
- Old Domestic Building, Curraglass Wood SAC (code 002041)
- Great Island Channel SAC (code 001058)
- Mullaghanish to Musheramore Mountains SPA (code 004162)
- The Gearagh SPA (code 004109)
- Cork Harbour SPA (code 004040)

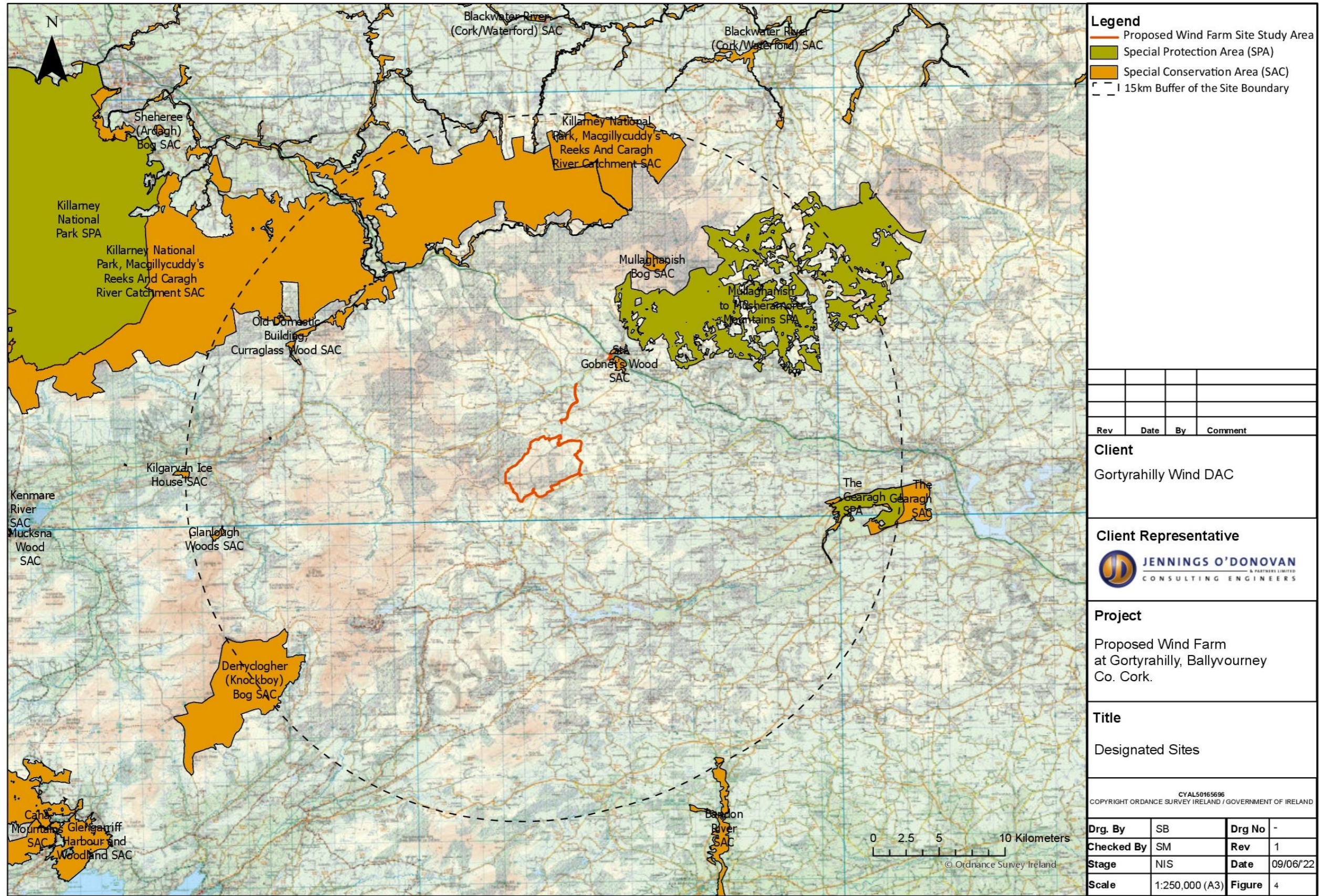


Figure 4. Locations of European designated sites within a 15 km radius of the site for the proposed Gortyrhilly Wind Farm.

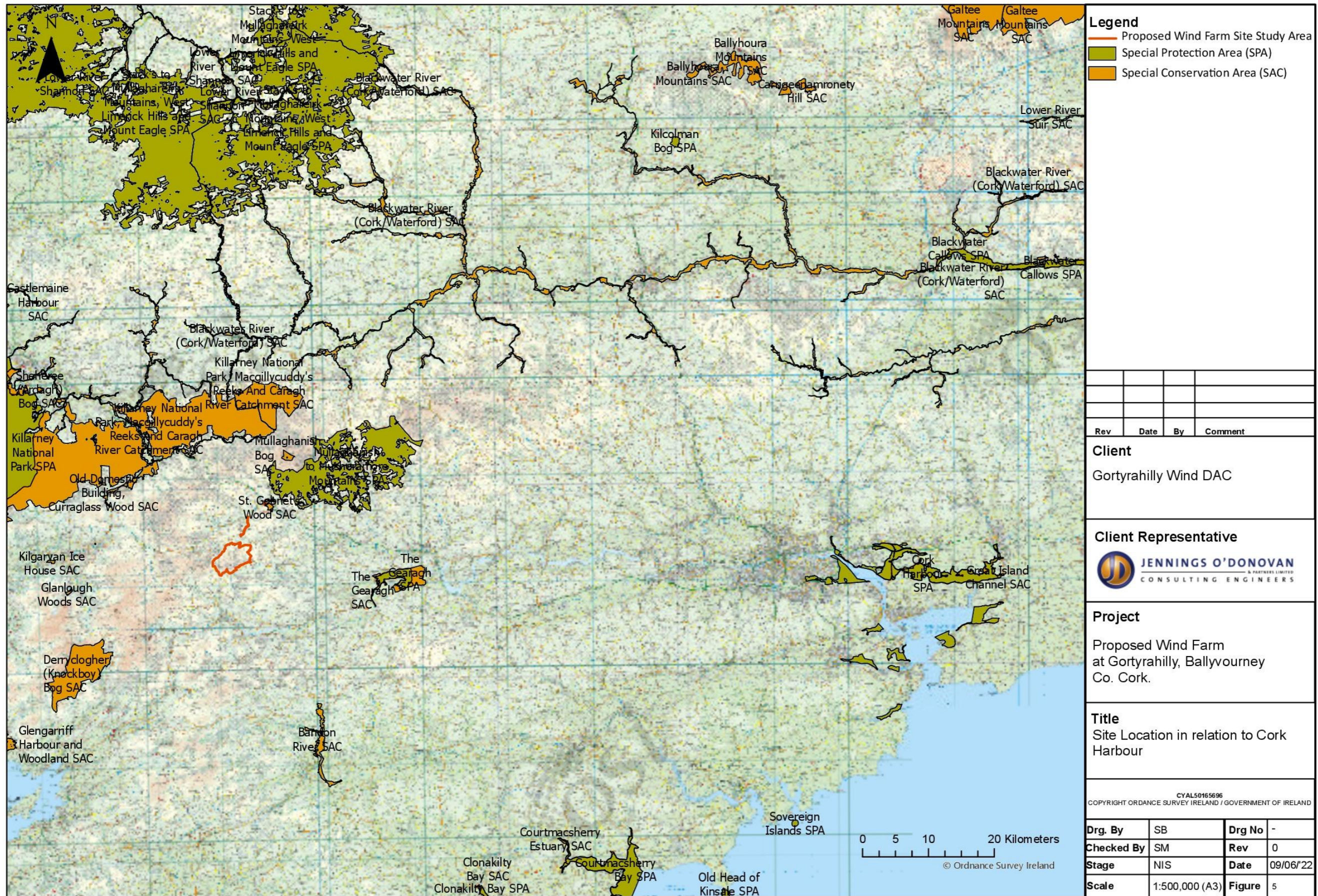


Figure 5. Locations of proposed Gortyrhilly Wind Farm site in relation to European designated sites within Cork Harbour.

Table 2: Relevant European sites, reasons for designation, distances from subject site and summary of connectivity.

European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrhilly wind farm site and summary of connectivity
SPECIAL AREAS OF CONSERVATION		
Killarney National Park, Macgillycuddy's Reeks & Caragh River Catchment SAC (site code 000365)	<p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</p> <p>European dry heaths [4030]</p> <p>Alpine and Boreal heaths [4060]</p> <p><i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]</p> <p>Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]</p> <p>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</p> <p>Blanket bogs (* if active bog) [7130]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><i>Taxus baccata</i> woods of the British Isles [91J0]</p> <p><i>Geomalacus maculosus</i> (Kerry Slug) [1024]</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Euphydrias aurinia</i> (Marsh Fritillary) [1065]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Alosa fallax killarnensis</i> (Killarney Shad) [5046]</p> <p>According to this SAC's site Conservation Objectives document (Version 1.0. Department of Culture, Heritage and the Gaeltacht, 23rd October 2017), for each of the listed QIs, the Conservation Objective is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	<p>The proposed wind farm site at Gortyrhilly is approximately 8.75 km south of the Caragh River component of the SAC. There are no linkages, hydrological or otherwise, between the two areas.</p> <p>The proposed wind farm site location is greater than the normal distance that foraging lesser horse-shoe bats would normally fly. McAney (in Lysaght & Marnell 2016) notes that the normal foraging distance is less than 2 km, while Schofield (cited in the NPWS Conservation Objectives for the site) notes that linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5 km around each roost.</p> <p>Approximately 20 km of the grid connection route is located along the route of an existing forestry road which runs parallel to the Clydagh River. The closest distance between the cable route corridor and the SAC is 41 m.</p> <p>It is concluded that a hydrological link exists</p>

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European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrhilly wind farm site and summary of connectivity
		between the Project area and the SAC.
Mullaghanish Bog SAC (site code: 001890)	<p>Blanket bogs (* if active bog) [7130]</p> <p>According to this SAC's site Conservation Objectives document (Version 1.0. Department of Arts, Heritage Regional, Rural & Gaeltacht Affairs, 16th May 2017) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.</p>	<p>The proposed wind farm site is approximately 8.75 km southwest of the SAC.</p> <p>There are no hydrological links between the two areas.</p> <p>While a section of the grid connection corridor runs within a forest track 632 m from the SAC, there is no connectivity as the SAC is on higher ground to the forest track, with forestry and heath between the two locations.</p>
The Gearagh SAC (site code:000108)	<p>Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]</p> <p>Rivers with muddy banks with Chenopodium rubri p.p. and Bidention p.p. vegetation [3270]</p> <p>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p> <p>Lutra lutra (Otter) [1355]</p> <p>According to this SAC's site Conservation Objectives document (Version 1.0. Department of Arts, Heritage Regional, Rural & Gaeltacht Affairs, 15th September 2016) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.</p>	<p>The proposed wind farm site is approximately 11 km west of the SAC.</p> <p>The Sullane River, which drains much of the wind farm and which will be crossed by a temporary bridge at Ballyvourney, enters the River Lee system at the Reservoir and approximately 2 km downstream of the Gearagh SAC.</p> <p>However, the extreme southwest sector of the site drains to the Bunsheelin River, which joins the River Lee at Ballingeery. The Lee flows through Lough Allua and continues towards the Gearagh.</p> <p>Therefore, a hydrological linkage</p>

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European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrhilly wind farm site and summary of connectivity
		occurs between the application site and the SAC
St Gobnet's Wood SAC (site code: 000106)	<p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>According to this SAC's site Conservation Objectives document (Version 1.0. Department of Housing, Local Government and Gaeltacht, NPWS 11th January 2022) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.</p>	<p>The proposed wind farm site at Gortyrhilly is approximately 3.75 km southwest of the SAC, while the proposed temporary bridge crossing over the Sullane River is within 50 m of the SAC.</p> <p>While the wind farm and the SAC are linked hydrologically by the Sullane River, none of the works associated with the project have potential to impact on the qualifying interest of the SAC</p>
Blackwater River (Cork/Waterford) (site code 002170)	<p>Estuaries [1130]</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140]</p> <p>Perennial vegetation of stony banks [1220]</p> <p>Salicornia and other annuals colonising mud and sand [1310]</p> <p>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</p> <p>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Alosa fallax fallax</i> (Twaite Shad) [1103]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p><i>Trichomanes speciosum</i> (Killarney Fern) [1421]</p>	The proposed wind farm site is approximately 12 km southwest of the SAC, with no hydrological linkages.

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European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrahilly wind farm site and summary of connectivity
	According to this SAC's site Conservation Objectives document (NPWS 31 st July 2012, Conservation objectives for Blackwater River SAC [002170]. Version 1.0. Department of Arts, Heritage and the Gaeltacht) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	
Derryclogher (Knockboy) Bog SAC (site code: 001873)	Blanket bogs (* if active bog) [7130] According to this SAC's site Conservation Objectives document (NPWS 16 th May 2017, Conservation objectives for Derryclogher (Knockboy) Bog SAC [001873]. Version 1.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	The proposed wind farm site is approximately 12 km northeast of the SAC. There is no connectivity, hydrological or ecological, between the two areas.
Glanlough Woods SAC (site code: 002315)	<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] According to this SAC's site Conservation Objectives document (NPWS 28 th September 2018 Conservation objectives for Glanlough Woods SAC [002315]. Version 1.0. Department of Culture, Heritage and the Gaeltacht) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.	The proposed wind farm site is approximately 14 km east of the SAC. There is no hydrological or ecological, connectivity, between the two areas. The proposed wind farm site location is greater than the normal distance that foraging lesser horse-shoe bats would normally fly. McAney (in Lysaght & Marnell 2016) notes that the normal foraging distance is less than 2 km, while Schofield (cited in the NPWS Conservation Objectives for the site) notes that linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5 km around each roost.
Kilgarvan Ice House SAC (site code 000364)	<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] According to this SAC's site Conservation Objectives document (NPWS 6 th November 2018, Conservation objectives for	The proposed wind farm site is approximately 12 km east of the SAC. There are no

European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrahilly wind farm site and summary of connectivity
	<p>Kilgarvan Ice House SAC [00364]. Version 1.0. Department of Culture, Heritage, and the Gaeltacht) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.</p>	<p>hydrological links between the two areas.</p> <p>The proposed wind farm site location is greater than the normal distance that foraging lesser horse-shoe bats would normally fly. McAney (in Lysaght & Marnell 2016) notes that the normal foraging distance is less than 2 km, while Schofield (cited in the NPWS Conservation Objectives for the site) notes that linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species within 2.5 km around each roost.</p>
<p>Old Domestic Building, Curraglass Wood SAC (site code 002041)</p>	<p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</p> <p>According to this SAC's site Conservation Objectives document (NPWS 27th August 2018, Conservation objectives for Old Domestic Building, Curraglass Wood SAC [002041]. Version 1.0. Department of Culture, Heritage, and the Gaeltacht) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected</p>	<p>The proposed wind farm site is approximately 11 km southeast of the SAC. There are no hydrological links between the two areas.</p> <p>The proposed wind farm site location is greater than the normal distance that foraging lesser horse-shoe bats would normally fly. McAney (in Lysaght & Marnell 2016) notes that the normal foraging distance is less than 2 km, while Schofield (cited in the NPWS Conservation Objectives for the site) notes that linear features such as hedgerows, treelines and stone walls provide vital connectivity for this</p>

European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrahillly wind farm site and summary of connectivity
		species within 2.5km around each roost.
Great Island Channel SAC (site code 001058)	<p>Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</p> <p>According to this SAC's site Conservation Objectives document (NPWS 6th June 2014, Conservation objectives for Great Island Channel SAC [001958]. Version 1.0. Department of Arts, Heritage and the Gaeltacht) for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats and/or the Annex II species for which the SAC has been selected.</p>	<p>The Sullane River, which drains much of the wind farm and which will be crossed by a temporary bridge at Ballyvourney, enters the River Lee system within the Inishcarra Reservoir downstream of Macroom, (distance of c.14 km from site). The Lee then flows for approximately 40 km before entering Cork Harbour and a further 5km to the SAC.</p> <p>While there is a total distance of approximately 59 km from the Gortyrahillly site to the SAC, hydrological connectivity does exist.</p> <p>Further, the extreme southwest sector of the site drains to the Bunsheelin River, which joins the River Lee at Ballingeery. The Lee flows through Lough Allua and continues towards the Gearagh and then to Cork Harbour.</p>
SPECIAL PROTECTION AREAS		
Mullaghanish to Musheramore Mountains SPA (site code: 004162)	<p>Hen Harrier (<i>Circus cyaneus</i>) [A082]</p> <p>According to this SPA's site Conservation Objectives document (NPWS 2022, Conservation objectives for Mullaghanish to Musheramore Mts SPA 004162. Generic version 9.0, Department of Housing, Local Government & Heritage), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species for which the SPA has been selected.</p>	<p>The site of the proposed wind farm at Gortyrahillly is approximately 5 km southwest of the SPA.</p> <p>Habitats suitable for foraging by hen harrier, including bog, heath, wet grassland and scrub, occur fairly</p>

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European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrhilly wind farm site and summary of connectivity
		<p>widely between the SPA and the wind farm site.</p> <p>The habitats within the wind farm site have potential to support foraging hen harriers.</p> <p>A section of the grid connection route is located along the route of an existing forestry road which runs north of the SPA. The closest distance between the cable route corridor and the SPA is 170 m.</p>
<p>The Gearagh SPA (site code: 004109)</p>	<p>A050 Wigeon <i>Anas penelope</i> A052 Teal <i>Anas crecca</i> A053 Mallard <i>Anas platyrhynchos</i> A125 Coot <i>Fulica atra</i> A999 Wetlands</p> <p>According to this SPA's site Conservation Objectives document (NPWS 2022, Conservation objectives for The Gearagh SPA 004109. Generic version 9.0, Department of Housing, Local Government and Heritage), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species for which the SPA has been selected.</p>	<p>The proposed wind farm site is approximately 11 km west of the SPA.</p> <p>The Sullane River, which drains the wind farm and which will be crossed by a temporary bridge at Ballyvourney, enters the River Lee system at the Reservoir and approximately 3 km downstream of the Gearagh SPA.</p> <p>However, the extreme southwest sector of the site drains to the Bunsheelin River, which joins the River Lee at Ballingeery. The Lee flows through Lough Allua and continues towards the Gearagh. Therefore, a hydrological linkage occurs between the application site and the SPA</p> <p>The habitats within the wind farm site do not have potential to</p>

European Site	Qualifying Interests / Special Conservation Interests (information correct as of 20 th June 2022) (*denotes a priority habitat)	Distance from proposed Gortyrhilly wind farm site and summary of connectivity
		support any of the Special Conservation Interests of the SPA.
Cork Harbour SPA (code 004040)	<p>Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Grey Heron (<i>Ardea cinerea</i>) [A028] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]</p> <p>According to this SPA's site Conservation Objectives document (NPWS 2014, Conservation objectives for Cork Harbour SPA 004140. Version 1.0, 16th Dec 2014, Department of Arts, Heritage and the Gaeltacht), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species for which the SPA has been selected.</p>	<p>The Sullane River, which drains much of the wind farm and which will be crossed by a temporary bridge at Ballyvourney enters the River Lee system within the Inishcarra Reservoir downstream of Macroom, (distance of c.14 km from site). The Lee then flows for approximately 40 km before entering Cork Harbour.</p> <p>While there is a total distance of approximately 54 km from the Gortyrhilly site to the SPA, hydrological connectivity does exist.</p> <p>Further, the extreme southwest sector of the site drains to the Bunsheelin River, which joins the River Lee at Ballingeery. The Lee flows through Lough Allua and continues towards the Gearagh and then to Cork Harbour.</p>

3.3 Potential Impacts

The assessment of potential impacts considers all scenarios within the range of turbine parameters proposed for the Development as shown in Table 3 below.

Table 3: Turbine Parameters

Turbine Parameter	Assessment Envelope
Turbine Blade Tip Height	179 m to 185 m
Rotor Diameter	149 m to 155 m
Hub Height	102.5 m to 110.5 m

3.3.1 Direct impacts on habitats and/or species during construction and/or operational and decommissioning phases of project

Gortyrahillly Wind Farm project is not within any designated site nor does it adjoin any such site.

While sections of the grid connection cable are within respective distances of 41 m (chainage 9,050 m) and 170 m (chainage 9,600 m) of the Killarney National Park, Macgillycuddy's Reeks & Caragh River Catchment SAC and the Mullaghanish to Musheramore Mountains SPA, the wind farm site at Gortyrahillly is between 3.75 km and 59 km distant from the European sites listed in **Table 2**. The northern section of the Grid Connection Route follows the Clydagh River which is sandwiched between townlands of Knocknagowan and Knocknabroare to the north (within European Sites) and Clydaghroe and Glashacormick to the south.

The temporary bridge crossing of the Sullane River at Ballyvourney is within 50 m of St. Gobnet's Wood SAC.

On the basis of geographical separation, there will be no direct impacts, such as physical loss or disturbance of habitats or species listed as qualifying interests of any European site, arising from the proposed development.

3.3.2 Potential Impacts by water discharges during construction, operational and decommissioning phases

There are hydrological linkages between the Development and the following European sites:

- Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (code 000365)
- St. Gobnet's Wood SAC (code 00106)
- The Gearagh SAC (code 000108)
- The Gearagh SPA (code 004109)
- Great Island Channel SAC (code 001058)

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- Cork Harbour SPA (code 004030)

While a link exists between the project area and St. Gobnet's Wood SAC via the Sullane River, the qualifying interest of the SAC, Old Sessile Oak Woods, occurs on ground above the high water mark and could not be affected in any way by pollutants from the project site which could potentially be carried in the river water. St. Gobnet's Wood SAC is therefore excluded from further consideration.

Great Island Channel SAC and Cork Harbour SPA, are connected to the proposed wind farm project via the River Sullane and River Lee but are located at respective distances of approximately 59 km and 54 km from the project site. There is considered to be no potential for any impact on these European sites under any circumstances in view of the distance between the source and receptor, and the presence of the Carrigadrohid and Inishcarra dams on the River Lee which form two reservoirs. Any pollutants or silts entering the drainage network at the proposed wind farm site, even in the most extreme scenarios and without mitigation of any form, would be completely attenuated by the dilution, dispersal and settlement that would occur within the upper river system and the reservoirs. The Great Island Channel SAC and the Cork Harbour SPA are therefore excluded from further consideration.

The following sites with hydrological connectivity remain for consideration:

- Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (code 000365)
- The Gearagh SAC (code 000108)
- The Gearagh SPA (code 004109)

Construction and decommissioning phase activities have the potential to cause negative effects to receiving watercourses and ultimately relevant qualifying interests and Special Conservation Interests (SCIs) of the above listed European sites.

The principal potential construction phase effects of the development relate to the release of suspended solids/nutrients, concrete and hydrocarbons into the drainage network arising from all construction related site works including the access road network, turbine bases and associated hardstands, sub-station building, borrow pits or repository areas, and the grid connection route. There is a risk of nutrient release as a result of the clear-fell of conifers required for the proposed development

There is also potential for effects on watercourses, and potentially the relevant qualifying interests and Special Conservation Interests (SCIs) of the above listed European sites, during

the operational phase due to on-site operational activities. The risk of pollutants entering local watercourses during the operational phase of the wind farm could arise primarily through soil run-off from unvegetated surfaces, spillages of hydrocarbons and other chemicals, and potential peat slippage.

The significance of a subsequent effect on the qualifying interests/special conservation interests within these three sites would vary depending on the type of pollutant, as well as the magnitude and duration of the event. As the conservation objectives of identified Natura 2000 sites could potentially be affected adversely, measures are required to avoid or reduce harmful effects of the proposed project (i.e. mitigation measures). Therefore, as the risk of potential significant effects on these three European Sites cannot be ruled out, Section 3 of this report provides information to allow the competent planning authority to carry out appropriate assessment for the proposed development.

3.3.3 Potential impacts on lesser horseshoe bat in the construction, operational and decommissioning phases

Three of the identified sites in **Table 2** are listed solely on the basis of the presence of lesser horseshoe bat, namely

- Glanlough Woods SAC
- Kilgarvan Ice House SAC
- Old Domestic Building, Curraglass Wood SAC

In addition, lesser horseshoe bat is a qualifying interest for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

The lesser horseshoe bat prefers broadleaf and mixed woodlands and needs a mosaic of landscape features, such as hedgerows, tree lines and stone walls, to fly along. It avoids open landscapes.

The location of the proposed wind farm at Gortyrahilly is substantially greater than the typical distance (2.5 km or less) that foraging lesser horseshoe bats would normally fly between their roosts and foraging grounds (NPWS Conservation Objectives, Lysaght & Marnell 2016).

As lesser horseshoe bat is the sole qualifying interest for the three above listed sites, it can be stated with scientific certainty that the proposed wind farm project does not have the potential to impact upon these sites and that they can be screened out.

3.3.4 Potential impacts on hen harrier in the construction, operational and decommissioning phases

The Mullaghanish to Musheramore Mountains SPA is located approximately 5 km to the southwest of the site for the wind farm at Gortyrhilly, while a section of the route for the grid connection cable will pass within 170 m from the SPA.

Construction works along the grid connection route carried out during the breeding season could have disturbance effects on hen harriers breeding within the SPA. The significance of any potential effect is unknown as such would be dependent on the locations of the nesting sites and the foraging ranges of the breeding pairs at the time of the works.

The baseline ornithological survey for the project (**Chapter 7: Ornithology**) has shown that hen harrier is an occasional winter visitor (October to March) to the site for the wind farm at Gortyrhilly. Birds were recorded either foraging or merely flying through the site and/or adjoining areas, though there was no evidence of winter roosting within the site or its surroundings. The presence of birds in winter in areas such as the site for the proposed wind farm is consistent with their dispersal from breeding areas.

It is considered that the construction of the section of grid connection cable route which passes close to the SPA could have a significant adverse effect on breeding hen harriers within the SPA should works be carried out during the breeding season.

3.3.5 Overview of potential impacts on European sites in absence of mitigation

The present assessment has shown objectively that for nine of the European sites identified in **Table 2**, there are no Source-Pathway-Receptor linkages and hence there is no potential for effects on qualifying interests or Special Conservation Interests as a result of the proposed Gortyrhilly Wind Farm project. These sites are:

- Mullaghanish Bog SAC (code 001890)
- St Gobnet's Wood SAC (code 00106)
- Blackwater River (Cork/Waterford) SAC (code 002170)
- Derryclogher (Knockboy) Bog SAC (code 001873)
- Glanlough Woods SAC (code 002315)
- Kilgarvan Ice House SAC (code 000364)
- Old Domestic Building, Curraglass Wood SAC (code 002041)
- Great Island Channel SAC (code 001058)
- Cork Harbour SPA (code 004030)

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It is considered that these Natura 2000 (European) sites can be screened out and are excluded from further assessment.

Likely significant effects on the following Natura 2000 sites could not be excluded during the construction, operational and/or decommissioning stages of the proposed development.:

- Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC (code 000365)
- The Gearagh SAC (code 000108)
- The Gearagh SPA (code 004109)
- Mullaghanish to Musheramore Mountains SPA (code 004162)

As it is considered that the risk of likely significant effects on these four European Sites cannot be ruled out, they are subject to further consideration in **Section 3** of this report.

4 NATURA IMPACT STATEMENT

The screening for appropriate assessment presented in Section 2 concludes that in the absence of mitigation, likely significant effects on European sites may arise as a result of the proposed development on 4 no. European sites, as follows:

- Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (code 000365)
- The Gearagh SAC (code 000108)
- The Gearagh SPA (code 004109)
- Mullaghanish to Musheramore Mountains SPA (code 004162)

Apart from the Mullaghanish to Musheramore Mountains SPA, the potential impacts of potential concern may arise as a result of contaminants originating within the project area reaching the relevant designated site and causing harmful effects on the qualifying interests and/or the Special Conservation Interests of the site.

It is considered that the relevant qualifying interests and Special Conservation Interests (SCIs) of the four European sites are as follows:

Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC

Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260]

Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]

Petromyzon marinus (Sea Lamprey) [1095]

Lampetra planeri (Brook Lamprey) [1096]

Lampetra fluviatilis (River Lamprey) [1099]

Salmo salar (Salmon) [1106]

Lutra lutra (Otter) [1355]

The Gearagh SAC

Water courses of plain to montane levels with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation [3260]

Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidentium* p.p. vegetation [3270]

Lutra lutra (Otter) [1355]

The Gearagh SPA

A050 Wigeon *Anas penelope*

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A052 Teal *Anas crecca*

A053 Mallard *Anas platyrhynchos*

A125 Coot *Fulica atra*

A999 Wetlands

Mullaghanish to Musheramore Mountains SPA

A050 Hen harrier *Circus cyaneus*

For three of the sites (Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC, the Gearagh SAC, the Gearagh SPA), the significance of a subsequent effect on the above listed qualifying interests/special conservation interests would depend on the type of pollutant, as well as the magnitude and duration of the event. For the Mullaghanish to Musheramore Mountains SPA, the significance of a subsequent effect on the SCI would depend on the level of potential disturbance to the breeding hen harriers.

Construction and decommissioning phase activities have the potential to cause negative effects to receiving watercourses and ultimately relevant qualifying interests and Special Conservation Interests (SCIs) of the above listed European sites.

The potential sources of effects on Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC, the Gearagh SAC, the Gearagh SPA during the construction and decommissioning stage are:

- Clearance of vegetation, soil and rock for widening and construction of access roads, hardstand and turbine bases;
- Crossing of watercourses on the turbine access route, grid connection route and the turbine delivery route;
- Effects of tree felling (approximately 11.97 ha) on water quality as a result of sediment and nutrient release;
- Creation of temporary infrastructure such as blade set-down areas, associated storage and assembly areas and crane pads;
- Placement and storage of material arising from infrastructure works;
- Access by construction equipment, including access away from the proposed infrastructure location (compaction and other damage);
- Potential for accidental spillage of hydrocarbons and other pollutants including concrete laitance;
- Potential of peat slippage or failure, and,

- Removal and restoration of existing infrastructure at decommissioning stage.

All construction activities have the potential to cause negative effects to receiving watercourses and aquatic species and habitats as a result of the release of suspended solids, concrete and hydrocarbons in run-off. The potential for increased silt loads with associated nutrients could negatively impact on water quality, resulting in potential adverse effects on aquatic habitats as well as salmonid spawning habitat and Freshwater Pearl Mussel (FPM) populations in the downstream reaches, with the scale of the effect being proportionate to the scale and duration of siltation. The habitats utilised by wetland bird species could also be adversely affected by the potential reduction in water quality as a result of sediment release from the proposed wind farm.

Aquatic Habitats

Aquatic habitats potentially at risk from pollutants are as follows:

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation [3270]

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation is a qualifying interest for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and for The Gearagh SAC.

The Conservation Objectives for these sites cite the following relevant Attributes and Targets which could be affected by poor water quality:

Attribute: Water quality: nutrients

Target: Maintain the concentration of nutrients in the water column necessary to support the typical species and vegetation composition of the habitat.

Attribute: Water quality: biological indicators

Target: Maintain good or high biological status necessary to support the typical species and vegetation composition of the habitat.

Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation is a qualifying interest for The Gearagh SAC.

The Conservation Objectives cite the following relevant Attribute and Target which could be affected by poor water quality:

Gortyrahilly Wind Farm Project - NIS

Attribute: Water quality: nutrients, phytoplankton biomass

Target: Maintain water quality necessary to support the typical species and vegetation composition of the habitat.

Freshwater Pearl Mussel

FPM occur on the River Flesk (the lower reaches of the Clydagh River) and are a qualifying interest for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC which extends to include the Clydagh River.

Fine sediment can affect adult FPM, as it interferes with filter feeding. It can also dramatically change the nature of a river bed where juveniles require water movement through gravel beds to obtain oxygen. Even short-term sedimentation is likely to kill all juveniles present (DAFM, 2018). In addition, nutrient-rich sediment may enter watercourses following harvesting, while the decomposition of harvest residue onsite can lead to the release of phosphorus, which can cause nutrient enrichment, for several years after harvesting.

Annex II Fish species and otter

Salmonid species require very high levels of water quality in order to complete their life cycles. High levels of suspended solid concentrations in waterbodies can affect the feeding and health of individual species through increased turbidity (inhibiting respiration through gills) and increased siltation affecting composition of riverbed substrate (reducing fry survival) as well as affecting spawning beds. Suspended solids often hold nutrients such as phosphorus that can result in eutrophication and reduced oxygen levels, which can affect all life stages of Atlantic salmon. Aquatic invertebrate communities and aquatic macrophytes can also be affected by sediment loading which reduces both the biotic diversity and the food resource for fish populations through direct toxicity to fish and invertebrates, and also indirectly affecting top predators such as otter in downstream reaches through a reduction in prey availability.

Wetland bird species

The Gearagh SPA is selected for the following Special Conservation Interests:

- A050 Wigeon *Anas penelope*
- A052 Teal *Anas crecca*
- A053 Mallard *Anas platyrhynchos*
- A125 Coot *Fulica atra*
- A999 Wetlands

Teal, Mallard and Coot are omnivorous feeders, while Wigeon is largely vegetarian. The food supplies of these bird species could be affected adversely by pollutants such as suspended solids, concrete run-off and hydrocarbons.

Hen harrier

The potential impacts that could affect hen harrier as a result of disturbance during the breeding season is only likely to occur during the construction phase of the grid connection only. Breeding activities such as display rituals, foraging and nest attendance could be affected by construction works.

As the conservation objectives of four identified Natura 2000 sites could potentially be affected adversely, mitigation measures are required to avoid or reduce harmful effects of the proposed project.

4.1 Analysis of “In-combination” Effects

The Habitats Directive requires competent authorities to make an appropriate assessment of any plan or project which is likely to have a significant effect alone or in-combination with other plans and projects.

There are 32 wind farms within 20 km² of the Gortyrhilly proposed development (an area of 1,256 km²). **Figure 6** shows the location of proposed, permitted and operational wind farms within a 20 km radius of the proposed turbines and **Table 4** below provides further information on these wind farms. Of the 32, 21 No. are operational (182 turbines total), 9 No. are permitted (49 turbines) and 2 No. are proposed (23 turbines).

The closest wind farms to the Gortyrhilly site are Derragh (189 m to south) and Cleanrath (3.05 km to south east). Most of the turbines are clustered to the west and north of the Gortyrhilly site.

The Gortyrhilly project will add a further 14 turbines to the total of 279 turbines.

² A distance of 20 km is taken as a precautionary distance for potential in-combination effects to occur – such a distance is beyond the normal foraging range of bird species associated with SPAs.

Gortyrhilly Wind Farm Project - NIS

A detailed inventory of planned and permitted projects within a 3 km radius of the site for the Gortyrhilly wind farm and 50 m either side of the grid connection route has been compiled (see **Appendix 2.5**, Chapter 2). There are mostly domestic scale developments or agricultural related developments (e.g. slatted sheds), and no potential pathways to European sites are identified. Potentially relevant projects which have received planning permission are:

Planning Ref. 194732 - Retention of a meteorological mast for a temporary period of 5 years, located in the townland of Gortyrhilly and approximately 5 km west of Renanirree village. This consists of a 80 m high lattice mast and associated guy wires. Permission granted by Cork County Council 17/05/2019.

Planning Ref. 184184 – A battery energy storage facility and associated works. Facility connects into the adjoining Ballyvouskill ESB substation via underground cable. Permission granted by Cork County Council 23/11/2018.

Planning Ref. 185686 – A battery energy storage facility and associated works. Permission granted by Cork County Council 10/01/2019.

All of the wind farm and other projects will have been, or will be in due course, assessed by the competent authority for potential adverse effects on relevant European sites. The proposed Development, with mitigation in place, will not have adverse effects on the integrity of any Natura 2000 (European) sites and therefore there is no pathway for it to act in-combination with other plans and projects to give rise to cumulative effects.

Table 4: Wind Farms within 20 km of the Proposed Gortyrhilly project

Wind Farm	Status	No. of Turbines	Approximate Distance to the Site Boundary	Direction from the Development
Barnadivane	Operational	14	17.96km	South East
Barnastooka	Operational	14	6.5km	West
Barrboy	Permitted	5	16.09km	South West
Caherdowney	Operational	4	11.15km	North East
Carriganimmy Macroom (Bawnmore)	Operational	6	14.11km	North East
Cleanrath	Operational	9	3.05km	South East
Clydaghroe, Clonkeen	Operational	4	8.77km	North East
Coolea	Permitted	1	5.02km	North West

Gortyrahilly Wind Farm Project - NIS

Wind Farm	Status	No. of Turbines	Approximate Distance to the Site Boundary	Direction from the Development
Coolknoohil Inchee	Permitted	2	4.3km	North West
Coolknoohil Kilgarvan (Everwind)	Operational	11	3.5km	North West
Coomacheo	Operational	15	11.74km	North East
Coomagearlahy Kilgarvan	Operational	15	5.91km	North West
Cummeennabuddoge	Pre-Planning	17	8.03km	North East
Cummeennabuddoge, Clydaghroe, Cloonkeen	Operational	2	9.55km	North East
Curraglass	Permitted	7	8.62km	South West
Derragh	Operational	6	189m	South
Derreenacrinnig	Permitted	7	18.51km	South West
Drishane Millstreet (Curragh Mountain/Coomacheo 2)	Operational	8	11.82km	North East
Dromleena	Permitted	9	17.66km	South
Garranereagh	Operational	4	19.33km	South East
Glanlee I (Midas)	Operational	6	6.4km	North West
Gneeves	Operational	11	11.68km	North East
Gneeves Milstreet	Permitted	7	11.81km	North East
Gortnakilla, Clonkeen Killarney	Permitted	4	6.76km	North West
Grousemount	Operational	24	4.50km	West
Inchamore	Pre-Planning	6	4.7km	North-West
Inchee, Poulbatha & Foilgreana (Midas)	Operational	6	5.44km	North West
Inchincoosh Kilgarvan	Operational	6	8.12km	North West
Knocknamork	Permitted	7	7.28km	North East
Rosseightragh, Lettercannon, Kilgarvan	Operational	7	7.56km	North West
Shehy More	Operational	11	8.31km	South
Sillahertane Kilgarvan	Operational	10	3.89km	East

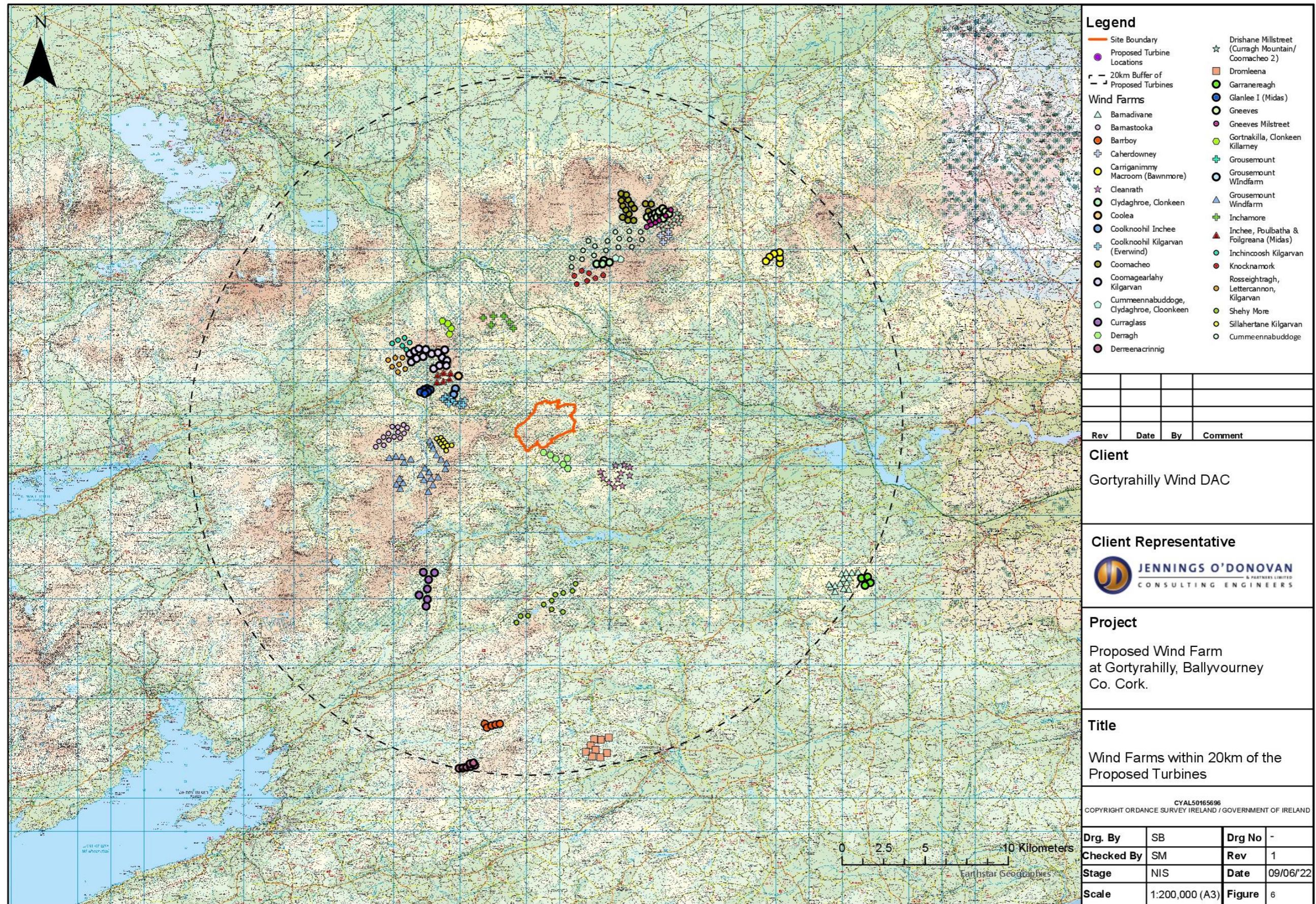


Figure 6. Locations of wind farm projects within a 20 km radius of the site for the proposed Gortyrhilly Wind Farm development.

4.2 Mitigation Measures During Construction Phase – Maintenance of Water Quality

The objective of the mitigation measures is to avoid, minimise and control contaminated run-off entering drains and local watercourses and potentially the identified European sites which are hydrologically linked to the project site. The achievement of this objective is described in the following sections.

All of the described measures are focused on preventing contaminated water from entering local watercourses and flowing towards the identified four European sites where there is the potential to cause effects on the relevant Qualifying Interests and Special Conservation Interests of the four sites. When in force, the mitigation measures will be monitored to ensure their efficacy. Should a failure in the mitigation occur, immediate action will be taken in accordance with the site-specific Emergency Plan (CEMP – Management Plan 1).

4.2.1.1 Mitigation by Avoidance

The greatest risk of adverse impacts on the aquatic environment will occur during the construction phase of the development. Key to minimising this risk has been the siting of all turbine locations and other key infrastructure at a minimum set-back from watercourses (65 m). In designing the layout of the access roads careful consideration has been given to minimise the numbers of watercourse crossings.

4.2.1.2 Mitigation by Design

Drainage measures have been developed to protect all receiving waters from potential impacts during the construction of the development in the catchment of the site and along the proposed grid connection. These measures are aimed at preventing sediments or other pollutants from entering watercourses through the containment and treatment on-site of all surface water run-off from areas of works. The appointed contractor will have appropriately qualified environmental personnel to ensure compliance during the construction stage with all mitigation measures, planning conditions and legislative requirements related to the maintenance of water quality. An Ecological Clerk of Works (ECoW) will be appointed as part of the environmental team for the duration of the project.

The mitigation measures have been incorporated into a Construction and Environmental Management Plan (CEMP) for the development which includes Construction Method Statements for key works. The CEMP has been developed using the Institute of Environmental

Management and Assessment (IEMA) Practitioner “*Environmental Management Plans*”, Best Practice Series, Volume 12, December 2008. The CEMP includes a Surface Water Management Plan (SWMP), a Water Quality Monitoring Plan and Watercourse Crossing Plan (WQMP) and a Waste Management Plan (WMP). The CEMP, SWMP, WQMP and WMP will require mandatory adherence by all parties involved in the construction of the Development (including any sub-contractors) in order to protect water quality within the study area. The development of the mitigation measures and all method statements for watercourse crossings follows all relevant guidance and current best practice.

The use of Sustainable Drainage Systems (SuDS) on site will minimise risk to watercourses from sedimentation during the construction and operational phases of the proposed development.

Surface water management measures will be put in place concurrently during the development of the road network. The measures entail the following key elements which are described in detail within the Surface Water Management Plan (**Appendix 2.1, CEMP**):

- Open Constructed drains for development run-off collection and treatment;
- Collection Drains for upslope “clean” water collection and dispersion;
- Filtration Check Dams to reduce velocities along sections of road which run perpendicular to contours;
- Settlement Ponds, Settlement Lagoons and Buffered Outfalls to control and store development runoff to encourage settlement prior to discharge at Greenfield runoff rates.

There will be no direct site run-off to watercourses during the construction phase with all outflows from drainage via settlement ponds from which treated surface water is released by diffuse overland flow at appropriate locations. To reduce the amount of silt laden water to be treated, clean water drains will be created upstream of the works area to divert water away from construction areas, thereby lessening the volume of water to be treated onsite.

De-watering of excavations, where required, will be through filtered ‘silt socks’ / dewatering bags or a ‘*Siltbuster*’ or similar system, prior to discharge. Excavations will be kept to the absolute minimum for the specific task and undertaken on a ‘just in time’ basis to minimise the extent of silty water generated and requiring treatment prior to discharge.

The watercourse crossings along the network of access roads are all designed as clear span structures with abutments set back from the river banks to avoid any modification to the stream channel and to minimise the potential for run-off of contaminants. There will be no instream

works undertaken and no tracking of machinery across any watercourse. Crossings will be undertaken by Bailey bridge or similar if required.

4.2.1.3 Mitigation by Reduction

Implementation of the following specific measures will ensure the protection of water quality in local watercourses and will ensure that contaminated water does not reach the identified European sites which have hydrological connectivity with the proposed development area.

This is a summary of the principle required mitigation measures, with full details being presented in the EIAR (**Chapter 9: Hydrogeology and Hydrology**) and the Construction Environmental Management Plan.

- No works will take place within the 65 m buffer zone of watercourses except for construction of the clear span and box culverts on the access road network.
- Site compounds and Soil storage areas will be located at a minimum distance of 65 m from any watercourse. All drainage from these facilities will be directed through a settlement pond with appropriate capacity and measures to provide spill containment.
- Sediment traps or settlement ponds will be provided at all outfalls during construction. Total suspended solid levels in all waters discharging to any watercourse shall not exceed 25 mg/l (Inland Fisheries Ireland, 2016)³. All construction site run-off will be channelled through a stilling process to allow suspended solids to settle out and through a spill-containment facility prior to discharge.
- Daily monitoring of all sediment traps and settlement ponds will be undertaken by the Contractor and supervised by the Environmental Manager to ensure satisfactory operation and/or maintenance requirements.
- The storage of oils, hydraulic fluids, etc., will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005).
- The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc., will be completed in the dry to avoid pollution of the freshwater environment.
- Vehicles will be refuelled off-site where possible. For vehicles that require refuelling on-site, fuels will be stored in the temporary construction compound and banded to

³ Inland Fisheries Ireland (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*.

at least 110% of the storage capacity of fuels to be stored. Refuelling will take place via a mobile double skinned fuel bowser. The bowser will be a double axle refuelling trailer which will be towed to the refuelling locations by a 4x4 vehicle. The 4x4 will carry, a drip tray, spill kit and absorbent mats in case of any accidental spillages. Only designated competent personnel will refuel plant and machinery on the Site.

- All machinery operating on water course crossings will be steam-cleaned in advance of works and routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken on dry land.
- Instream works shall be undertaken during the period 1st July to 30th September as required by Inland Fisheries Ireland Guidance (2016) to avoid accidental damage or siltation of spawning beds, and unless otherwise specified by IFI during consultations in advance of works.
- Culverting works will be undertaken in dry conditions and in low flow conditions on drains that do not run dry. This will be within the summer period during periods of dry stable weather.
- During the culvert installation and associated construction work, double silt fences shall be emplaced immediately downgradient and downstream of the construction area for the duration of the construction phase.
- Where bank strengthening or scour protection is required, (i.e., upstream and downstream of new structures, to ensure no undercutting or destabilisation of either the structure or riparian bank areas occurs) this will utilise sensitively placed rock armour with appropriate landscaping to tie the feature into the existing riverbank profile. Gabion baskets and Reno mattresses shall not be used. This work shall be overseen by the Ecological Clerk of Works.
- All bank sides and streambeds shall be fully reinstated to avoid ongoing erosion. This will entail appropriately sloped banks to provide stability and establishing vegetative cover as quickly as possible using only native species appropriate to the existing environment.
- There will be no concrete batching on the Site. Rather, it will be transported to the Site as it is required. A dedicated, bunded area will be created to cater for concrete wash-out and this will be within the temporary construction compound located to the south of T11. This will be for the wash-out of the chutes only after the pour. Concrete trucks will then exit the Site and return to the supply plant to wash out the mixer itself. The main concrete pours at the turbine locations will be planned in advance and proposed mitigation measures are summarised as follows (full details in **EIAR Chapter 9: Hydrology and Hydrogeology**):

1. Avoiding large concrete pours, for Turbine Foundations for example, on days when heavy or prolonged rainfall is forecast, i.e., 25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or rainfall depth greater than monthly average in seven days (prolonged heavy rainfall over a week). Concrete pouring will be avoided during a period in which a Met Éireann Status Red weather event has been implemented.
 2. Ensuring that all concrete pour areas are dewatered prior to pouring concrete and while the concrete is curing.
 3. Making covers available so that areas can be covered if heavy rain arrives during the curing process which will prevent runoff of concrete which has a high pH.
- In the unlikely event of any incidents of pollution to watercourses, immediate steps will be undertaken to resolve the cause of the pollution and mitigate against the impact of pollution, following the advice set out in, the site specific Emergency Response Plan (**CEMP-Management Plan 1**).

4.3 Mitigation Measures to Avoid Disturbance to Breeding Hen Harriers

A section of the grid connection cable (at chainage 9,600 m) will be laid within a forest track that runs close (within 180 m) to the Mullaghanish to Magheramore Mountain SPA. For the relevant section, cable laying works will take place outside of the bird nesting season (March-August inclusive) so as to avoid any risk of disturbance to breeding hen harrier (the Special Conservation Interest of the SPA). This section is shown in **Figure 7**.

A similar approach would be taken for the removal of the cable during the decommissioning stage. This would be subject to review of the boundary of the SPA at the time (which may have changed over 35 years).

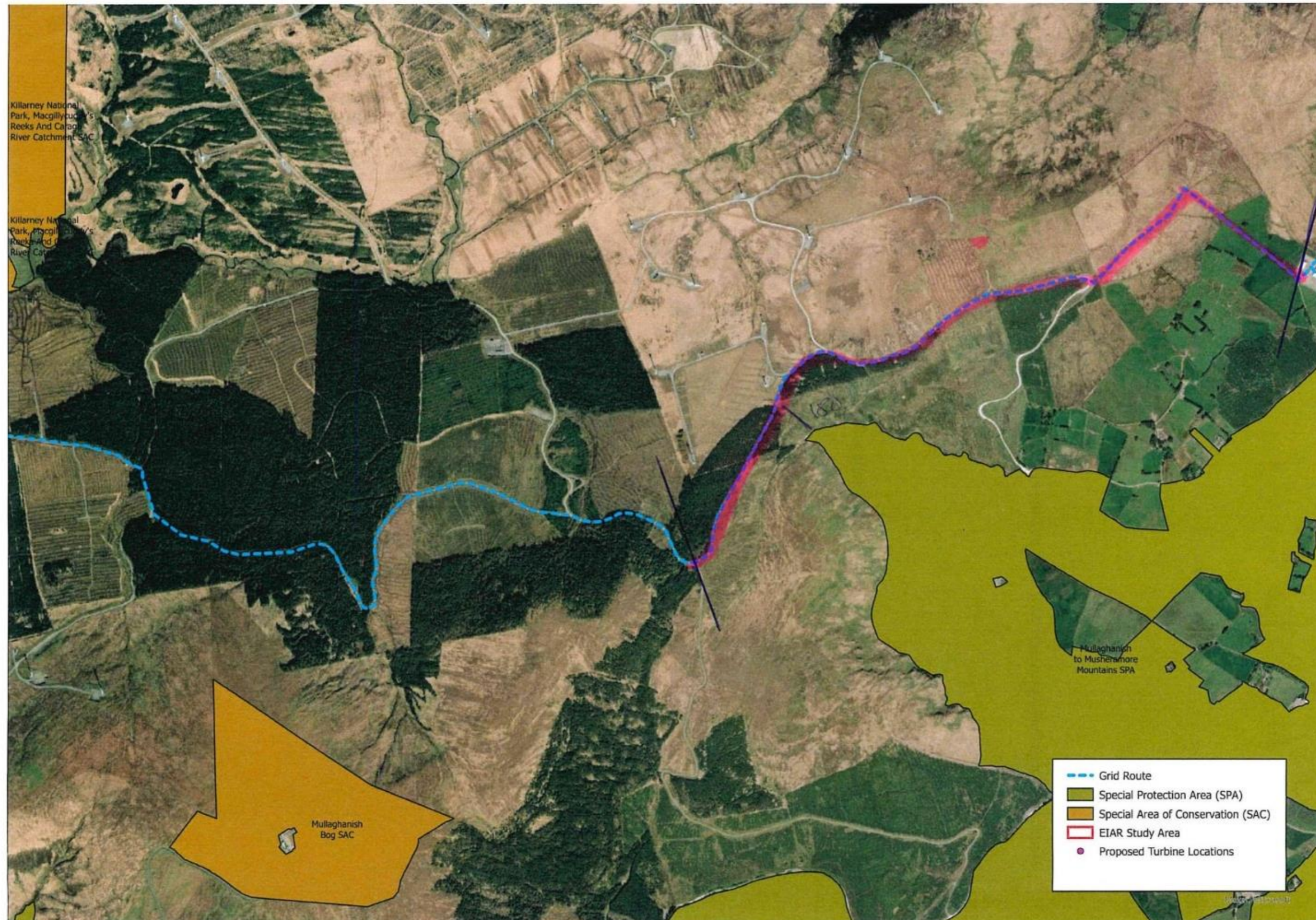


Figure 7: Section of grid connection cable where works will take place outside of the bird nesting season (highlighted in pink).

4.4 Mitigation Measures During Operational Phase

The following measures will be implemented during the operational phase to ensure the ongoing protection of watercourses and water quality at the Site and in downstream reaches leading towards the identified European sites which have hydrological connectivity with the proposed development site:

- The site compound / office will house all potential pollutants within a secure bunded COSSH store for the operational phase of the project.
- All onsite wastewater treatment facilities will function in full compliance with current water quality requirements (Building Regulations 2010 as amended S.R. 66:2015) to prevent nutrient loading entering aquatic environments.

4.5 Mitigation Measures During Decommissioning Phase

Decommissioning of the proposed development will be scheduled to take place after the proposed 35 year lifespan of the project. Potential impacts on European sites from the decommissioning phase of the proposed development are likely to be broadly similar to construction phase impacts, in terms of potential surface water quality impacts from ground disturbance, refuelling and the storage of potentially hazardous materials onsite. The implementation of all mitigation measures detailed for the construction phase will be adopted in full during the decommissioning phase to ensure all such impacts are avoided.

When the final Decommissioning Plan is prepared prior to decommissioning and presented as a standalone document, all drainage management measures, which will include maintenance of the operational drainage measures, will be included in that document, as required. However, it should be noted that by the time decommissioning is undertaken after the planned 35 year lifespan of the Development, the areas within the Site will have re-vegetated resulting in a resumption of the natural drainage management that will have existed prior to any construction. It is not anticipated that the decommissioning phase will interrupt this restored drainage regime in any way with the works proposed. As a minimum measure, areas where freshly placed soil material as part of turbine foundation reinstatement work will be surrounded by silt fencing if deemed necessary until the area has naturally revegetated.

Restoration of the Site following decommissioning of infrastructure will require the prior establishment of the new baseline conditions at the site which will have developed over the intervening 35 years life of the project. These studies will inform any modification or additional sensitivities that may need to be factored in restoration and site specific measures.

5 CONCLUSION

This Natura Impact Statement has considered the potential impacts of the proposed Gortyrahilly Wind Farm Project on the integrity of 13 no. identified European sites.

For the reasons set out in detail in this NIS, in the light of the best scientific knowledge in the field, all aspects of the proposed development which, by itself, or in combination with other plans or projects, which may affect the relevant European Sites have been considered.

The NIS contains information that the Board, as competent authority, may consider in making its own complete, precise and definitive findings and conclusions and upon which the Board is capable of determining that all reasonable scientific doubt has been removed as to the effects of the proposed development on the integrity of the relevant Natura 2000 sites.

In conclusion, in the light of the conclusions of the assessment which it shall conduct on the implications for the European sites concerned, the Board is enabled to ascertain that the proposed development will not adversely affect the integrity of any of the European sites concerned.

Table 5: Summary of effects and mitigation

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
<p>Killarney National Park, Macgillycuddy's Reeks & Caragh River Catchment SAC (site code 000365)</p>	<p>The proposed development has potential to release contaminated surface water during the construction, operation and decommissioning phases.</p> <p>This could have effects on the following qualifying interests:</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion vegetation</i> [3260]</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p>	<p>The SWMP and detailed drainage design for the development incorporates a large number of tried and tested measures that are used as standard by industry for protection of water quality. The design and mitigation measures are set out in detail in the SWMP but can be summarised as measures to prevent sediment release to surface water features during the construction phase of the development. The SWMP standard measures also include regulation of flow to prevent scouring and allow settlement of sediment to occur. Principal measures are as follows:</p> <ul style="list-style-type: none"> The establishment of a 65 m buffer zone between work areas and watercourses. 	<p>The Environmental Manager working with the appointed construction contractor will implement mitigation during construction and decommissioning.</p> <p>The operator and / or wind farm owner will assume responsibility for implementation and maintenance of mitigation measures during operation.</p>	<p>The mitigation measures are site-specific and are proven techniques that if applied as proposed will avoid any adverse effects on the integrity of the SAC.</p>	<p>No</p>

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
	<p><i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]</p>	<ul style="list-style-type: none"> • Provision of sediment traps or settlement ponds at all outfalls during construction. • Daily monitoring of all sediment traps and settlement ponds to be undertaken by the Environmental Manager to ensure satisfactory operation and/or maintenance requirements. • Storage of oils, hydraulic fluids, etc. to be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005). • The pouring of concrete, sealing of joints etc. to be completed in the dry to avoid pollution of the freshwater environment. • Refuelling of vehicles will be off-site where possible. • Culverting works will be undertaken in dry flow conditions on drains that do not run dry. During the culvert installation works, double silt fences 			

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
		<p>shall be emplaced immediately downgradient and downstream of the construction area for the duration of the construction phase.</p> <ul style="list-style-type: none"> • All bank sides and streambeds shall be fully reinstated to avoid ongoing erosion. • There will be no concrete batching on the Site. Rather, it will be transported to the Site as it is required. • In the unlikely event of any incidents of pollution to watercourses, immediate steps will be undertaken to resolve the cause of the pollution and mitigate against the impact of pollution, following the advice set out in the site specific Emergency Response Plan (which is part of the CEMP). <p>Erosion and sediment controls will be monitored and maintained on a continuous basis throughout the construction phase.</p>			

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
<p>The Gearagh SAC (site code 000108)</p>	<p>The proposed development has potential to release contaminated surface water during the construction, operation and decommissioning phases.</p> <p>This could have effects on the following qualifying interests:</p> <p>Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</p> <p>Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidentium</i> p.p. vegetation [3270]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p>	<p>The SWMP and detailed drainage design for the development incorporates a large number of tried and tested measures that are used as standard by industry for protection of water quality. The design and mitigation measures are set out in detail in the SWMP but can be summarised as measures to prevent sediment release to surface water features during the construction phase of the development. The SWMP standard measures also include regulation of flow to prevent scouring and allow settlement of sediment to occur. Principal measures are as follows:</p> <ul style="list-style-type: none"> • The establishment of a 65 m buffer zone between work areas and watercourses. • Provision of sediment traps or settlement ponds at all outfalls during construction. 	<p>The Environmental Manager working with the appointed construction contractor will implement mitigation during construction and decommissioning.</p> <p>The operator and / or wind farm owner will assume responsibility for implementation and maintenance of mitigation measures during operation.</p>	<p>The mitigation measures are site-specific and are proven techniques that if applied as proposed will avoid any adverse effects on the integrity of the SAC.</p>	<p>No</p>

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
		<ul style="list-style-type: none"> • Daily monitoring of all sediment traps and settlement ponds to be undertaken by the Environmental Manager to ensure satisfactory operation and/or maintenance requirements. • Storage of oils, hydraulic fluids, etc. to be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005). • The pouring of concrete, sealing of joints etc. to be completed in the dry to avoid pollution of the freshwater environment. • Refuelling of vehicles will be off-site where possible. • Culverting works will be undertaken in dry flow conditions on drains that do not run dry. During the culvert installation works, double silt fences shall be emplaced immediately downgradient and downstream of the 			

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
		<p>construction area for the duration of the construction phase.</p> <ul style="list-style-type: none"> • All bank sides and streambeds shall be fully reinstated to avoid ongoing erosion. • There will be no concrete batching on the Site. Rather, it will be transported to the Site as it is required. • In the unlikely event of any incidents of pollution to watercourses, immediate steps will be undertaken to resolve the cause of the pollution and mitigate against the impact of pollution, following the advice set out in the site specific Emergency Response Plan (which is part of the CEMP). <p>Erosion and sediment controls will be monitored and maintained on a continuous basis throughout the construction phase.</p>			

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
<p>The Gearagh SPA (site code 004139)</p>	<p>The proposed development has potential to release contaminated surface water during the construction, operation and decommissioning phases.</p> <p>This could have effects on the following Special Conservation Interests:</p> <p>A050 Wigeon <i>Anas penelope</i> A052 Teal <i>Anas crecca</i> A053 Mallard <i>Anas platyrhynchos</i> A125 Coot <i>Fulica atra</i> A999 Wetlands</p>	<p>The SWMP and detailed drainage design for the development incorporates a large number of tried and tested measures that are used as standard by industry for protection of water quality. The design and mitigation measures are set out in detail in the SWMP but can be summarised as measures to prevent sediment release to surface water features during the construction phase of the development. The SWMP standard measures also include regulation of flow to prevent scouring and allow settlement of sediment to occur. Principal measures are as follows:</p> <ul style="list-style-type: none"> • The establishment of a 65 m buffer zone between work areas and watercourses. • Provision of sediment traps or settlement ponds at all outfalls during construction. 	<p>The Environmental Manager working with the appointed construction contractor will implement mitigation during construction and decommissioning.</p> <p>The operator and / or wind farm owner will assume responsibility for implementation and maintenance of mitigation measures during operation.</p>	<p>The mitigation measures are site-specific and are proven techniques that if applied as proposed will avoid any adverse effects on the integrity of the SAC.</p>	<p>No</p>

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
		<ul style="list-style-type: none"> • Daily monitoring of all sediment traps and settlement ponds to be undertaken by the Environmental Manager to ensure satisfactory operation and/or maintenance requirements. • Storage of oils, hydraulic fluids, etc. to be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005). • The pouring of concrete, sealing of joints etc. to be completed in the dry to avoid pollution of the freshwater environment. • Refuelling of vehicles will be off-site where possible. • Culverting works will be undertaken in dry flow conditions on drains that do not run dry. During the culvert installation works, double silt fences shall be emplaced immediately downgradient and downstream of the 			

European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
		<p>construction area for the duration of the construction phase.</p> <ul style="list-style-type: none"> • All bank sides and streambeds shall be fully reinstated to avoid ongoing erosion. • There will be no concrete batching on the Site. Rather, it will be transported to the Site as it is required. • In the unlikely event of any incidents of pollution to watercourses, immediate steps will be undertaken to resolve the cause of the pollution and mitigate against the impact of pollution, following the advice set out in the site specific Emergency Response Plan (which is part of the CEMP). <p>Erosion and sediment controls will be monitored and maintained on a continuous basis throughout the construction phase.</p>			

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European Site	Potential Effect on Qualifying Interest(s)	Mitigation	Responsibility for Implementation of mitigation	Effect of the proposed Mitigation Measures	Adverse effects on the integrity of the Natura 2000 sites Y/N
<p>Mullaghanish to Musheramore Mountains SPA (code 004162)</p>	<p>The proposed development has potential to cause disturbance to breeding birds during the construction and decommissioning phases.</p> <p>This could have effects on the Special Conservation Interest:</p> <p>A050 Hen Harrier Circus cyaneus</p>	<p>No works will take place along the identified section of the grid connection route in proximity to the SPA during the breeding season (March-August inclusive).</p>	<p>The project manager will ensure that this seasonal restriction is adhered to.</p>	<p>The restriction on works during the breeding season will ensure that breeding birds will not be disturbed.</p>	<p>No</p>

REFERENCES

Daly, D. (2004), *Groundwater at Risk in Ireland - Putting Geoscientific Information and Maps at the Core of Land Use and Environmental Decision-making*, John Jackson Memorial Lecture, Royal Dublin Society, November 2004.

Department of Environment, Heritage and Local Government (2010 revision). *Appropriate Assessment of Plans and Projects in Ireland*. Guidance for Planning Authorities.

Department of Housing, Local Government and Heritage (2022). *Protected sites - listings and maps*. See www.npws.ie

European Commission (1996). *Interpretation Manual of European Union Habitats*. Version Eur 15. European Commission, DG XI.

Environment Agency (2001). *Guide to Good Practice for the Development of Conceptual Models and the Selection and Application of Mathematical Models of Contaminant Transport Processes in the Subsurface*. Environment Agency National Groundwater and Contaminated Land Centre Report, Solihull, UK.

European Commission Environment DG (2002). *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*.

European Commission (2018). *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC*. Guidance issued by European Commission (21st November 2018).

European Commission (2021) *Assessment of Plans and Projects in relation to Natura 2000 sites – (Revised) Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Guidance issued by European Commission (28.9.2021 C(2021) 6913 final)

European Commission (2021) *ANNEX to the Commission notice to the Assessment of Plans and Projects in relation to Natura 2000 sites – (Revised) Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC: Examples of Practices, Case Studies, Methods and National Guidance*. Issued by European Commission (28.9.2021 C(2021) 6913 final)

Lysagh, L. & Marnell, F. (eds.) (2016) *Atlas of Mammals in Ireland 2010-2015*, National Biodiversity Data Centre, Waterford.

Office of the Planning Regulator (2021) *OPR Practice Note PN01 Appropriate Assessment Screening for Development Management*. March 2021.

Gortyrahilly Wind Farm Project - NIS

Royal Society (1992) *Risk: Analysis, Perception and Management*. The Royal Society, London (ISBN 0-85403-467-6).