



Cush Wind Farm
Phase II

Environmental Impact Assessment Report

Annex 1.1: Scoping Report

Cush Wind Limited



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Environmental Impact Assessment Scoping Report

Cush Wind Limited

DOCUMENT CONTROL

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1.0 INTRODUCTION

Cush Wind Limited (CWL) ('the Developer') intends to apply for planning permission for the construction and operation of a wind farm, consisting of a 3 no. wind turbine extension to the permitted Cush Wind Farm¹ ('Cush Wind Farm Phase I'), including the construction of a wind farm switch room and c. 5km of 33kV underground electricity line ('UGL') to facilitate the connection of the wind farm to the national electricity network, and all associated site development works ('the project'). The project is located in rural Co. Offaly, approximately 4km north of the town of Birr and c. 28km south-west of Tullamore, Co. Offaly.

The location of the project, in a regional context, is illustrated at **Figure 1** below and shown on the Project Location Plan drawing at **Annex 1**.

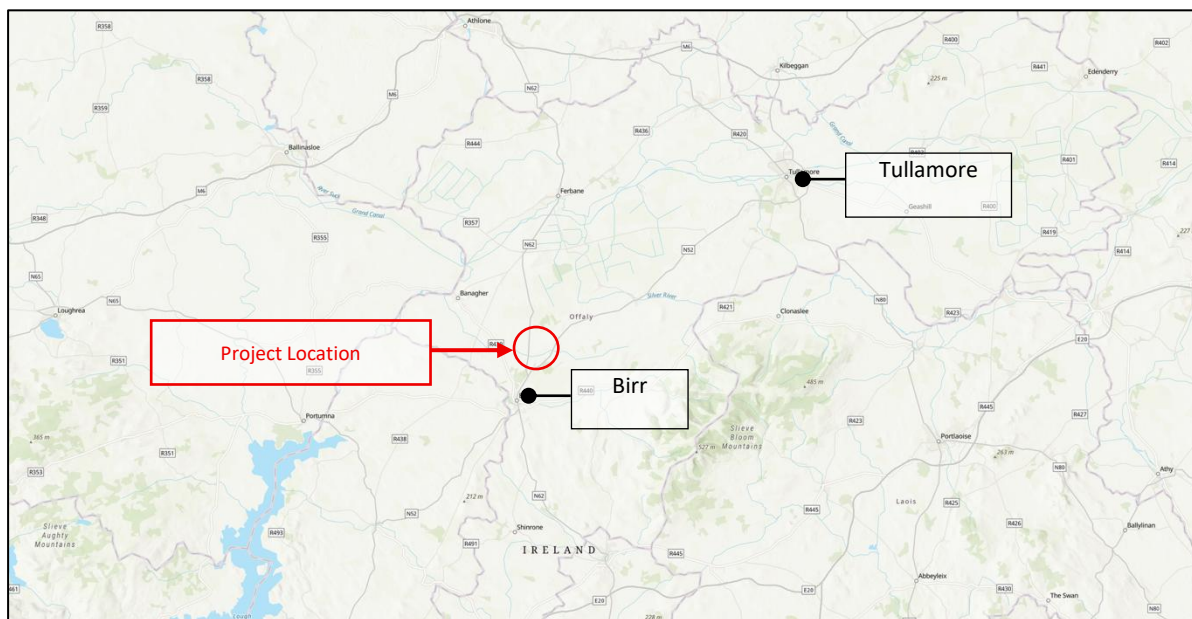


Figure 1: Project Site Location

1.1 THE DEVELOPER

CWL is a renewable energy developer with substantial experience in the renewable industry; the company principals owning and operating a number of permitted and operational wind farms both within Ireland and internationally.

1.1.1 THE AGENT

Galetech Energy Services (GES) has been commissioned by CWL to coordinate the preparation of an Environmental Impact Assessment Report (EIAR) including the scoping process. GES is an Irish multi-disciplinary renewable energy consultancy that specialises in the project management of planning, environmental and technical engineering services of wind energy developments from project feasibility through to delivery and operation. GES combines the expertise of leading experts in wind farm design, planning and environmental assessment and has extensive experience in managing and coordinating EIAR projects for wind energy and associated electricity grid and substation developments.

¹ [An Coimisiún Pleanála Reference: ABP-318816-24](#)

1.2 PURPOSE OF THIS REPORT

The purpose of the Environmental Impact Assessment (EIA) scoping process is to identify key environmental elements which may be affected by the project thus requiring assessment in the EIA process and to eliminate those which are not likely to be affected from further assessment. The scoping process identifies sources or causes of potential environmental effects, the pathways by which the effects can happen, and the sensitive receptors which are likely to be affected. It defines the appropriate level of detail for the information to be provided in the Environmental Impact Assessment Report (EIAR). In essence, the primary focus of scoping is to define the most appropriate assessment of likely significant effects related to the project.

The aims of this document are to:-

- set out the overall approach to the preparation of the EIAR;
- describe the proposed content and structure of the EIAR;
- summarise key baseline information;
- describe the proposed assessment methodology;
- identify potential effects at all stages of the project; and,
- identify topics/factors which do not require further assessment and can be scoped out.

2.0 ENVIRONMENTAL IMPACT ASSESSMENT

2.1 WHAT IS EIA?

EIA is a process required by the European Union (EU) Environmental Impact Assessment Directive 2011/92/EU, as amended by 2014/52/EU ('the EIA Directive'), and transposed into Irish law by way of Part X of the Planning & Development Act 2000 (as amended).

EIA is carried out by the relevant competent authority to ensure that projects, where the likelihood of significant effects on the environment cannot be excluded, are subject to a comprehensive and independent examination, analysis and evaluation of their likely significant effects on the environment; including the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects; of both their construction and operation phases, prior to being granted planning permission.

2.2 EIA SCREENING

In accordance with the provisions of the Planning & Development Act 2000 (as amended), EIA is mandatory when certain classes of projects exceed specific sizes and thresholds. Planning applications for such projects must be accompanied by an EIAR. Schedule 5 of the Planning and Development Regulations 2001 (as amended) provides that the following class of development proposal shall be subject to EIA:-

"Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts"

The project consists of a 3 no. wind turbine extension to the permitted Cush Wind Farm (Phase I) which will result, of itself, in a total output of greater than 5mw. It is therefore of a scale which exceeds the mandatory threshold for EIA. Furthermore, as the proposed project represents an extension to the previously approved, 8 turbine

project (i.e. Cush Wind Farm Phase I), on a cumulative scale, the project exceeds the mandatory threshold for EIA.

In addition to the above, a judgement of the High Court in respect of *O’Grianna & Ors. v. An Bord Pleanála* ([2014] IEHC 632) determined that a wind farm and its connection to the national grid are considered a single indivisible project for the purpose of the EIA Directive, and whilst the project’s attendant grid connection is not, of itself, a category or type of development listed as requiring EIA, as the project will form part of an overall development that was formerly subject to EIA, an EIAR will be prepared and submitted to allow the Planning Authority/An Coimisiún Pleanála to undertake a complete in-combination EIA of the overall development.

2.3 WHAT IS AN EIAR?

An EIAR is a written statement of the likely significant effects, if any, which the project, if carried out, will have on the environment. The EIAR consists of a systematic analysis of the project, including its construction, operation and decommissioning phases, in relation to the existing environment. It is an iterative process carried out throughout the full lifecycle of the project design and consenting process so as to allow for preventative and ameliorative action, as necessary, at a point in time when changes can still be made to the project that anticipate, avoid and mitigate any likely significant effects foreseen.

The EIAR is the principal document that informs the EIA process and provides integral information which consenting authorities can use, amongst other considerations, in independently undertaking EIA and informing a decision-making process.

The EIAR can also be used by third parties, including members of the public concerned, as part of the public participation process, to evaluate the project and its likely significant environmental effects, and to inform any submissions made to the planning application process.

The EIAR will be prepared in accordance with the provisions contained within Schedule 6 of the Planning and Development Regulations 2001 (as amended) and the 2014 EIA Directive; each of which set out the information to be contained in an EIAR. In addition, the EIAR will take account of the contents of the third Renewable Energy Directive 2023/2413 (the RED III Directive), which was adopted in the EU on 09 October 2023. The RED III Directive was transposed into Irish planning law from the 07 August 2025 via the European Union (Planning and Development) (Renewable Energy) Regulations 2025 (S.I 274 & 435 of 2025).

2.4 PURPOSE OF THE EIAR

The EIAR provides for a system of sharing information about the environment, within which a project sits, and enables effects to be foreseen and prevented during the design and consent stages. The purpose of the EIAR is to:-

- Anticipate, avoid and reduce significant effects;
- Assess and mitigate effects;
- Maintain objectivity;
- Ensure clarity and quality;
- Provide relevant information to decision makers; and,
- Facilitate better consultation.

It is a statutory requirement that the EIAR pays particular regard to the:-

- Key alternatives;
- Proposed project;
- Receiving environment;
- Likely significant effects;
- Mitigation and monitoring measures; and,
- Residual effects.

A non-technical summary must also be provided.

2.5 EIAR METHODOLOGY

In May 2022, the Environmental Protection Agency (EPA) published the *Guidelines on the Information to be contained within an Environmental Impact Assessment Report* and these guidelines reflect the 2014 EIA Directive and the provisions contained therein. The guidelines are a statutory document and provide guidance on the role of the EIAR in the EIA process, the key activities involved in the EIAR process, and guidance on the presentation of the information contained in the EIAR.

GES, and all experts involved in the preparation and production of the EIAR, will have regard to these guidelines; while best practice guidance related to each individual environmental discipline or topic addressed by the EIAR will also be adhered to.

The EPA guidelines include a 7 no. stage approach (sequence) in the production of the EIAR. This includes:-

- Screening;
- Scoping;
- Consideration of Alternatives;
- Project Description;
- Baseline Description;
- Assessment of Likely Significant Effects; and,
- Mitigation/Monitoring.

The guidelines outline that adherence to this sequence ensures an objective and systematic approach is achieved. Using this sequence, the environment is described using a number of specific headings and this provides for a separate section for each topic. The description of the existing environment, the likely significant effects (positive, negative, & cumulative), mitigation and monitoring measures, and residual impacts are then grouped together in each section, covering each topic. This format allows for ease of investigation into each topic and for specialist studies/input to be integrated seamlessly.

2.6 CONTENT AND STRUCTURE OF THE EIAR

In order to be relevant, complete and legally compliant, the content of this EIAR includes all of the information required by the EIA Directive and national legislation, as appropriate and necessary to the specific characteristics of the project, and includes:-

- (a) A description of the project comprising information on the site, design, size and other relevant features of the project;
- (b) A description of the likely significant effects of the project on the environment;

- (c) A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- (d) A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;
- (e) A non-technical summary of the information referred to in points (a) to (d); and,
- (f) Any additional information specified in Annex IV of the EIA Directive relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

In order to provide for a consistent approach and to communicate clear, concise, unambiguous information, each chapter of the EIAR will be systematically organised so as to follow a similar basic structure, as follows:-

- The existing environment: A description of the context, character, significance and sensitivity of the receiving (baseline) environment using standard descriptive methods, in order to predict the likely significant effects of the project;
- The likely significant effects of the project: The aspects of the construction, existence and operation of the project that are likely to affect the existing environment including, as appropriate, predicted, potential, residual, 'do nothing' and 'worst case' effects. The likely significance of any effects is determined with reference to magnitude, intensity, integrity, duration and probability; and,
- The measures to mitigate and monitor adverse effects: The range of methods which are proposed for mitigation by avoidance, reduction and remedy of any likely significant effects (including unplanned events) together with ongoing monitoring of the efficacy of mitigation measures.

This structure, which clearly separates data (descriptions of the receiving environment and of the project) from impact predictions (likely significant effects, mitigation measures and residual effects), is designed to ensure that replicable impact assessments, based on rigorous scientific information and verifiable evidence, is carried out using recognised methods that are presented and documented in a fully legible, transparent and objective manner.

This methodological structure is designed to reduce any possible subjective information and bias in order to facilitate the competent authority in its independent EIA of the project.

2.7 FORMAT OF THE EIAR

The EIAR will be set out in the following chapter format:-

- Introduction;
- Assessment of Project Alternatives;
- Description of the Project;
- Population and Human Health;
- Biodiversity;

- Land & Soil;
- Water;
- Air Quality;
- Climate;
- Landscape;
- Cultural Heritage;
- Noise & Vibration;
- Shadow Flicker;
- Material Assets; and,
- Interaction of the Foregoing.

Each chapter of the EIAR will be structured using the following general format:-

- Introduction;
- Methodology;
- Description of the Existing Environment;
- Description of Likely Significant Effects;
- Mitigation & Monitoring Measures;
- Residual Effects; and,
- Summary.

2.7.1 INTRODUCTION

This section will introduce the environmental topic to be assessed and the elements and receptors to be examined within the assessment.

2.7.2 METHODOLOGY

Specific topic-related methodologies will be outlined in this section. This will include the methodology used in describing the existing environment and undertaking the impact assessment. It is important that the methodology is documented to ensure that the reader understands how the assessment was undertaken.

2.7.3 DESCRIPTION OF THE EXISTING ENVIRONMENT

An accurate description of the existing environment is necessary to predict the likely significant effects of a new development. Existing baseline data will be used as a valuable reference for the assessment of actual effects from a development once it is in operation. To describe the existing environment, desktop reviews of existing data sources will be undertaken for each specialist area relying on published reference reports and datasets to ensure the objectivity of the assessment. Desktop studies will also be supplemented by field surveys in order to verify the accuracy of the desktop study and/or to gather additional environmental information for incorporation into the EIAR.

The existing environment will be evaluated to determine its importance, significance and sensitivity. The significance and sensitivity of a specific environment will be derived from legislation, national policies, local plans and policies, guidelines and/or professional judgements.

2.7.4 DESCRIPTION OF THE LIKELY EFFECTS

In this section, assessments will be made as to how the existing or receiving environment will interact with the project. The full extent of the project's effects prior to the implementation of mitigation measures are introduced will be assessed and described. Effects from the construction, operation and decommissioning phases of the project will be discussed; while interactions with other environmental topics and cumulative effects with other developments will also be assessed.

The evaluation of the significance of the effect will be undertaken. Where possible, pre-existing standardised criteria for the significance of effects will be used in accordance with the guidelines set out in the *EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (May 2022). Additional assessment criteria can include Irish legislation, international standards, European Commission and EPA guidelines or good practice guidelines. Where appropriate criteria do not exist, the assessment methodology section will set out the criteria used to evaluate the significance based on the assessor's professional judgement.

2.7.5 MITIGATION & MONITORING MEASURES

If significant effects are assessed as likely to arise, mitigation measures will be devised to minimise effects on the environment. Mitigation measures 'by avoidance', 'by reduction' and 'by remedy' may be implemented. It is likely that mitigation measures will also be proposed even where predicted effects are not assessed to be significant which will ensure that environmental effects are minimised to the greatest possible extent.

Proposals to undertake pre- or post-construction monitoring, or monitoring during construction activities, may also be proposed to obtain additional information on the project site to inform construction methods, to ensure that activities are been completed in accordance with best practice guidelines and/or to ensure the efficacy of the proposed mitigation measures. These measures, and a clear justification for their implementation, will be described in this section.

2.7.6 RESIDUAL EFFECTS

This section will describe those environmental effects which will remain following the implementation of mitigation and monitoring measures. These effects will be described in detail and an assessment of their significance undertaken.

2.7.7 SUMMARY

A summary of the assessment undertaken will be provided in this section along with an overall assessment of the significance of the likely effects.

2.8 CONTRIBUTORS TO THE EIAR

The EIA Directive requires that an EIAR must be prepared by a team of competent, qualified experts with an appropriate combination of experience, expertise and knowledge related to the significance, complexity and range of effects that an EIAR needs to assess, including the early anticipation of effects. In order to ensure that the information included in the EIAR is complete to a high level of objective quality, such competences include relevant prior experience and knowledge of the characteristics of the project type and sensitivities likely to be present in the receiving environment; an understanding of the legal context of the decision-making process, including relevant case law; and an appropriate range of specialist technical experts to

address different environmental factors, and their interactions.

The preparation of this Scoping Report has been managed by GES with recognised experts carrying out specialist scoping assessments within their individual field. GES will also coordinate the preparation of the EIAR and, in addition to the appointed specialist experts, will prepare a number of specific chapters, as detailed at **Table 1** below.

Chapter	Environmental Factor/Topic	Specialist Consultant
1	Introduction	GES
2	Assessment of Project Alternatives	GES
3	Description of the Project	GES
4	Population & Human Health	GES
5	Biodiversity	SLR Consulting Ltd. Triturus Environmental Ltd. (<i>Aquatic Ecology</i>)
6	Land & Soil	Hydro-Environmental Services Ltd. Fehily Timoney & Company Ltd. (<i>Peat Stability Assessment</i>)
7	Water	Hydro-Environmental Services Ltd.
8	Air Quality	AWN Consulting Ltd.
9	Climate	AWN Consulting Ltd.
10	Landscape	Macro Works Ltd. GES (<i>Photomontages</i>)
11	Cultural Heritage	Horizon Archaeology Ltd. Caitríona Moore Archaeology and Built Heritage (<i>Peatland Field Survey</i>)
12	Noise & Vibration	AWN Consulting Ltd. GES (<i>noise monitoring</i>)
13	Shadow Flicker	GES
14	Material Assets	GES Pager Power Ltd. (<i>Radio Telescope Impact Assessment</i>)
15	Interaction of the Foregoing	GES
Non-Technical Summary		GES

Table 1: Specialist Consultants involved in the preparation of this Scoping Report

3.0 CONSULTATION

Consultation, to date, has predominately comprised engagement with organisations and authorities, key service providers (e.g. utilities and telecommunications) and other stakeholders to whom the project may be of interest or may be affected by the project; and consultation with the local community and general public.

3.1 STAKEHOLDER CONSULTATION

A wide range of statutory and non-statutory organisations were contacted in writing at an early stage in the scoping process to gather their views on the EIAR scope and the likely significant environmental effects of the project. The process involved furnishing each organisation with a *Preliminary Scoping Report* accompanied by a set

of maps and drawings, and requesting written feedback. All responses received will be fully assessed and taken into consideration in the scope of the EIAR and, where necessary, the layout and design of the project will be revised in accordance with specific recommendations.

The following stakeholders were consulted with:-

- Airspeed Telecom;
- AirNav Ireland;
- An Garda Síochana;
- Ajisko Ltd;
- An Taisce;
- Bat Conservation Ireland;
- Birdwatch Ireland;
- Bord Gáis Energy;
- Broadcasting Authority of Ireland (Coimisiún na Meán);
- BT Communications Ireland;
- Commission for Communications Regulations;
- Commission for Regulation of Utilities;
- Department of Agriculture, Food and the Marine;
- Department of Defence;
- Department of Environment, Climate and Communications;
- Department of Housing, Local Government & Heritage;
- Department of Tourism, Culture, Arts, Gaeltacht, Sport & Media;
- Department of Transport;
- Eastern & Midlands Regional Assembly;
- Eir;
- EirGrid;
- Enet Telecommunications Networks Limited;
- Environmental Protection Agency;
- ESB Networks;
- Fáilte Ireland;
- Gas Networks Ireland;
- Geological Survey of Ireland;
- Health & Safety Authority;
- Health Service Executive – Environmental Health Department;
- Iarnród Éireann;
- Imagine Group;
- Inland Fisheries Ireland;
- Irish Aviation Authority;
- Irish Peatland Conservation Council;
- Irish Raptor Study Group;
- Irish Wildlife Trust;
- JFK Communications Ltd;

- Magnet Plus;
- National Ambulance Service;
- National Federation of Group Water Schemes;
- National Parks & Wildlife Service;
- Netshare Ireland;
- Offaly County Council;
- Office of Public Works;
- Open Eir;
- Ormand Flying Club (Birr Airfield);
- Radio Services & Building Limited;
- Sport Ireland Outdoors;
- Sustainable Energy Authority of Ireland;
- Tetra Ireland Communications Limited;
- The Arts Council;
- The Heritage Council;
- Three (3) Ireland;
- Towercom;
- Transport Infrastructure Ireland;
- Údarás na Gaeltachta;
- Uisce Éireann;
- Virgin Media Ireland;
- Viatel Ireland;
- Vodafone Ireland;
- Waterways Ireland; and,
- 2rn (RTE Transmission Network Limited).

3.2 COMMUNITY CONSULTATION

The Developer has undertaken public consultation in connection with both the permitted Cush Wind Farm Phase I and the proposed Phase II development. Consultation on Phase I took place during 2022 and 2023, while the dedicated Phase II consultation programme commenced in March 2026.

The Phase II programme combined door-to-door visits, information leaflets, engagement with local elected representatives, a consultation clinic and dedicated website, telephone and email channels. Door-to-door consultation was undertaken with residents in the vicinity of the proposed development, focusing on the area within approximately 2km. Information was provided on the proposed project and the means of contacting the Community Liaison Officer (CLO), with notification notes left where residents were unavailable.

The project website, www.cushwindfarm.ie, provides project information, updates and details of consultation opportunities. A dedicated freephone number and email address provide further means for residents and other interested parties to contact the community engagement team.

A consultation clinic was held on 4 June 2026 at Birr Golf Club, Birr, County Offaly. Members of the public were afforded the opportunity, by appointment, to discuss the

project with the community engagement team. Draft layout drawings and photomontages were made available. Individual home visits were also offered to residents unable to attend.

Further engagement included updates in August 2026 concerning the previously proposed substation arrangements.

4.0 DESCRIPTION OF THE PROJECT

The project consists of the construction and operation of a wind farm, consisting of a 3 no. wind turbine extension to the permitted Cush Wind Farm² ('Cush Wind Farm Phase I'), including crane hardstandings, access tracks, internal wind farm underground cabling, spoil deposition areas, and the construction of an electrical switch room and associated c.5km of 33kV underground electricity line to facilitate the connection of the proposed wind farm to the national electricity network, and all associated site development works.

The project will also include a range of off-site or secondary developments including the turbine component haul route, construction material haul routes and the importation of materials.

Where the 'project' or 'proposed project' is referred to in this Scoping Report this encompasses the entirety of the project, as described above, for the purposes of EIA in accordance with the EIA Directive.

Where the 'proposed wind farm' or 'proposed wind farm site' is referred to, this refers to turbines and associated foundations and hardstanding areas, access tracks, internal wind farm underground cabling, site drainage, reinstatement and environmental stabilisation works (including peat/spoil management/deposition and environmental stabilisation), and all associated site development works.

Where the 'proposed grid connection' is referred to, this refers to the proposed electrical switch room and associated c.5km of 33kV underground electricity line connecting the proposed wind farm to the proposed Mullanafawnia 110kV substation³, together with all ancillary works and apparatus.

Table 1 below outlines the location of each of the proposed, 3 no., wind turbines.

ID	Easting	Northing
T9	608636	710729
T10	608275	711034
T11	608944	711100

Table 1: Wind Turbine Coordinates

Coordinates provided in Irish Transverse Mercator (ITM)

An overview of the project layout is provided at **Annex 1** and shown at **Figure 2**, below.

² [An Coimisiún Pleanála Reference: ABP-318816-24](#)

³ The Mullanafawnia 110kV substation, to be located on lands at Mullanafawnia, Co. Offaly, is not yet constructed and remains a proposed development being promoted by a separate developer. The proposed Mullanafawnia 110kV substation is currently the subject of Strategic Infrastructure Development Pre Application Consultation with An Coimisiún Pleanála under Reference ACP-324608-26. The proposed substation does not make up part of the proposed project, but is assessed cumulatively throughout the EIAR.

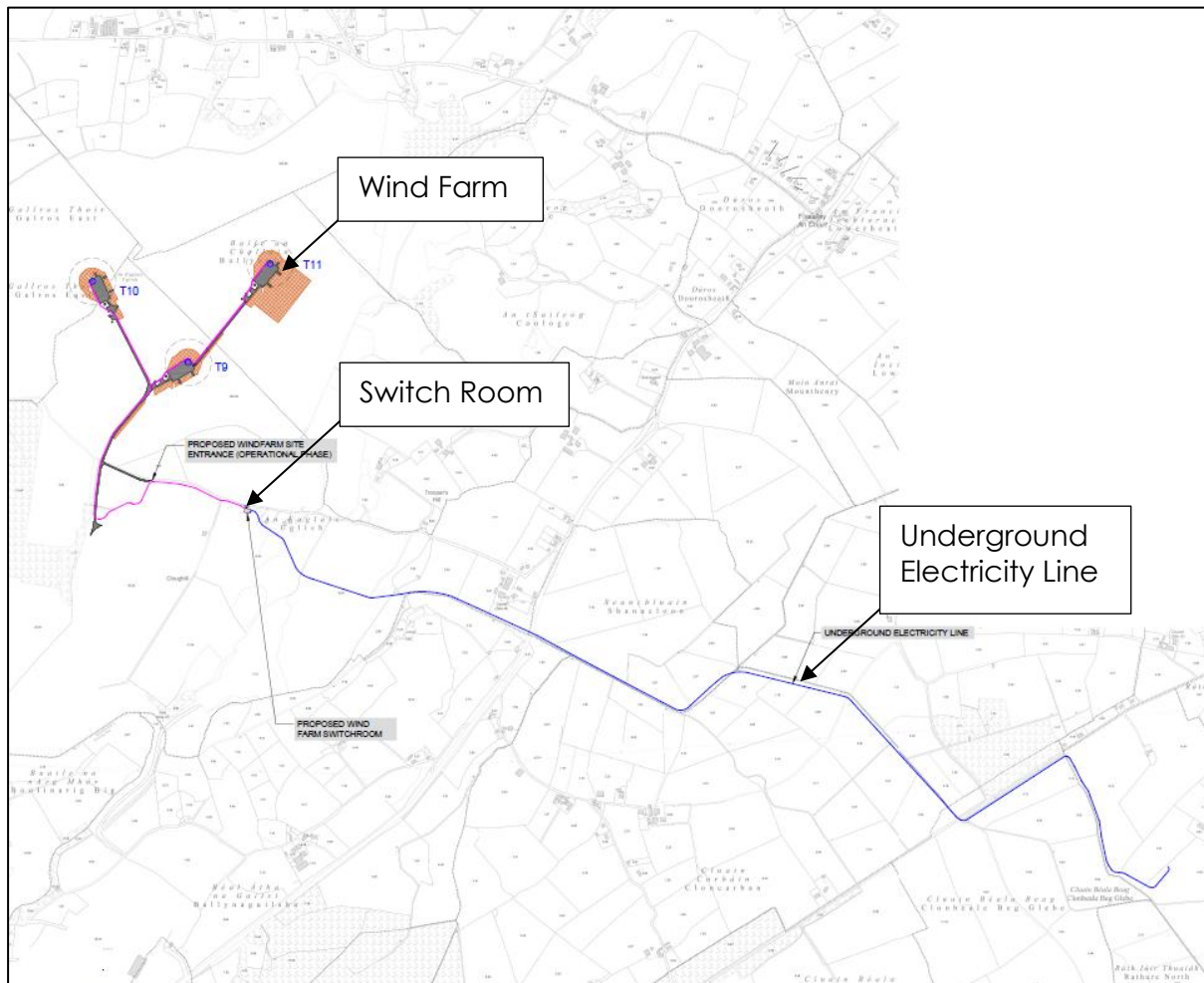


Figure 2: Project Layout Overview

4.1 PROPOSED WIND FARM

4.1.1 WIND TURBINES

The proposed turbines will each consist of a three-bladed rotor attached to a nacelle (hub) which contains the mechanical drive train and electrical generation mechanisms. A typical wind turbine is shown at **Figure 3** below. The blades will be constructed of glass reinforced plastic and lightning protection conduits are integral to their construction. The nacelle is supported on a steel tower of tubular construction. The colour of the proposed turbines and blades will be white, off-white or light grey in accordance with the *Wind Energy Development Guidelines for Planning Authorities 2006* and as determined by the Planning Authority.

The final turbine model and manufacturer have not yet been selected. The Developer has undertaken the design-flexibility consultation process with Offaly County Council, and the Planning Authority has issued an Opinion confirming that the planning application may be made and decided before the final turbine dimensions are confirmed, subject to their falling within the specified dimension range.

The proposed wind turbines, to be installed on the proposed wind farm site, will have the following dimension range:

- Turbine Tip Height – Maximum height 200 metres, Minimum height 199.1 metres

- Hub Height – Maximum height 120.9 metres, Minimum height 111.6 metres
- Rotor Diameter: - Maximum diameter 175 metre, Minimum diameter 158 metres

The EIAR assesses the likely significant environmental effects of turbines within the proposed dimension range on a topic-specific basis. Each specialist assessment considers the turbine dimensions, configurations or other characteristics relevant to that environmental topic, as described in the respective EIAR chapters.

For construction-related effects governed by the extent of physical disturbance, the assessment is based on the maximum assumed footprint of the relevant infrastructure, including turbine foundations, crane hardstands, access tracks and associated works. Other environmental effects are assessed using the dimensions and characteristics relevant to those effects, rather than assuming that the maximum physical footprint represents the greatest potential effect in every case.

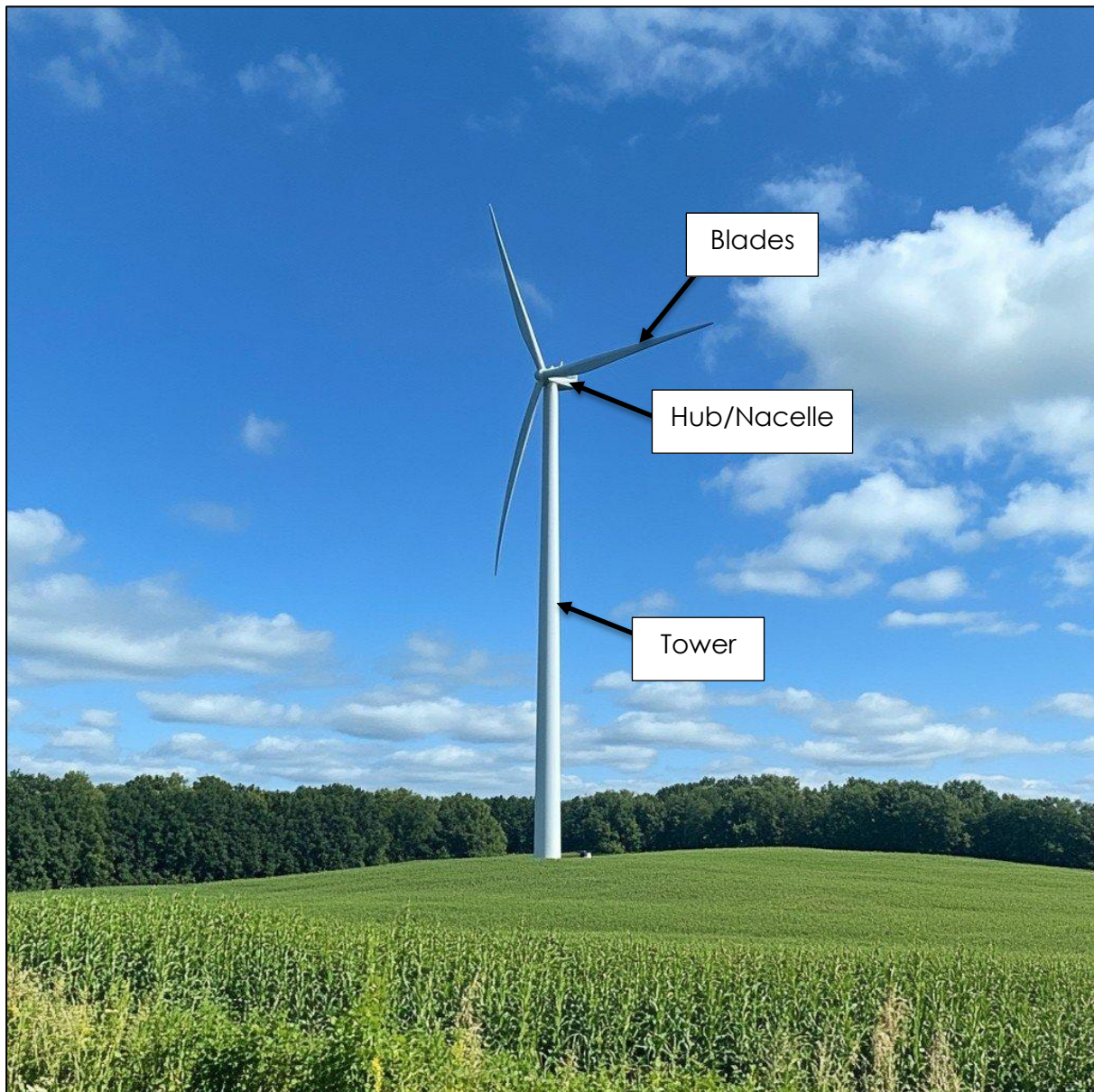


Figure 3: Typical Wind Turbine

4.1.2 TURBINE FOUNDATIONS

Each turbine tower will be secured to a reinforced concrete foundation using an appropriate anchoring arrangement. Initial geotechnical investigations indicate that gravity raft foundations are likely to be suitable at the proposed turbine locations. The final foundation type will be confirmed through detailed design and further site-specific geotechnical investigations prior to construction, taking account of the ground conditions and the turbine model selected. Piled foundations will be used where required by the ground conditions.

For assessment purposes, a gravity raft foundation approximately 28.9m in diameter, with a foundation depth of approximately 3m–5m, has been assumed. This describes the built foundation; the excavation required to accommodate it and prepare a suitable formation may extend slightly below 5m, depending on local ground conditions. Where piled foundations are required, their dimensions and pile depths will be determined through site-specific geotechnical design within the parameters assessed in the EIA.

4.1.3 HARDSTANDINGS

Crane hardstanding areas will be established adjacent to each turbine to facilitate turbine erection and subsequent maintenance and decommissioning activities. Each hardstand will typically measure approximately 100m by 45m and will consist of levelled and compacted unsealed hardcore placed over a geotextile membrane. Final supplier-specific arrangements will remain within the development footprint shown on the project drawings and assessed in the EIA. The crane hardstands will be retained during the operation phase to accommodate maintenance and major component replacement where required.

Temporary set-down areas will be located adjacent to each hardstand during construction to accommodate turbine components following delivery and crane components during assembly. Following turbine erection, the temporary set-down areas will be reinstated, while the permanent crane hardstands will be retained.

4.1.4 ON-SITE ACCESS TRACKS

Approximately 1.7km of new on-site access tracks will be constructed to provide access during the construction and operation phases. The tracks will be predominantly of floated construction, with founded construction used where required by ground conditions. They will comprise unsealed crushed stone with a typical running width of approximately 5m, together with additional widening at bends to accommodate turbine delivery vehicles.

The proposed tracks will connect with the access tracks permitted as part of Cush Wind Farm Phase I. Access will utilise the permitted construction phase entrance on the eastern side of the N62 national road and the permitted operation phase entrance from the L300321 local road. A separate new entrance from the L300321 local road will serve the proposed electrical switch room building.

4.1.5 INTERNAL WIND FARM UNDERGROUND CABLING

Electrical and communications cabling will be required to connect each turbine to the proposed wind farm electrical switch room, see **Section 4.2.1** below. The cables will be located underground, installed in ducting within trenches of 1m in depth, and will generally follow the alignment of on-site access tracks.

4.1.6 SITE DRAINAGE AND REHABILITATION WORKS

The proposed wind farm site is partly located on Galros Bog, which was formerly subject to industrial peat extraction by Bord na Móna. Industrial peat extraction has ceased, and Bord na Móna has prepared the Draft Galros Bog Rehabilitation Plan (2026) pursuant to its obligations under Integrated Pollution Control Licence P0500-01. CWL has engaged with Bord na Móna regarding the relationship between the proposed project and the rehabilitation measures. The draft Rehabilitation Plan recognises the proposed wind farm as a potential future land-use constraint and provides for the integration of bog rehabilitation with the construction and operation of the wind farm.

The project design, including the Site Drainage Plan forming part of the Surface Water Management Plan, has had regard to the draft Rehabilitation Plan and has been developed to ensure compatibility with its rehabilitation objectives and associated drainage, water-level management, silt-control and monitoring measures. Peat and spoil management arrangements have similarly been developed having regard to the proposed rehabilitation of the bog.

The project includes a designated spoil deposition area immediately southeast of T11, together with smaller deposition areas around the turbine bases and along the access tracks. Excavated material will be managed in accordance with the project's Peat and Spoil Management Plan, with appropriate drainage, stability, reinstatement and monitoring measures.

4.1.7 TURBINE COMPONENT HAUL ROUTE

Turbine components will be transported from the Port of Galway via the N6, M6, N52 and N62, following the haul route assessed for the permitted Cush Wind Farm Phase I. An updated Route Access Survey has been undertaken to accommodate the proposed turbine dimension range.

Accommodation works will be required at identified locations along the route. These principally comprise temporary road widening and hardcore at junctions and roundabouts, temporary removal and reinstatement of street furniture and fencing, and cutting back trees and hedgerows. Temporary accommodation works will be reinstated following turbine deliveries. At the R339/Connolly Avenue junction in Galway City, approximately 6m of existing wall will be permanently removed and replaced with fencing.

Turbine components will be delivered as part of a coordinated construction programme for Cush Wind Farm Phases I and II. Deliveries will access the proposed wind farm via the construction phase entrance from the N62 and associated access tracks permitted as part of Phase I.

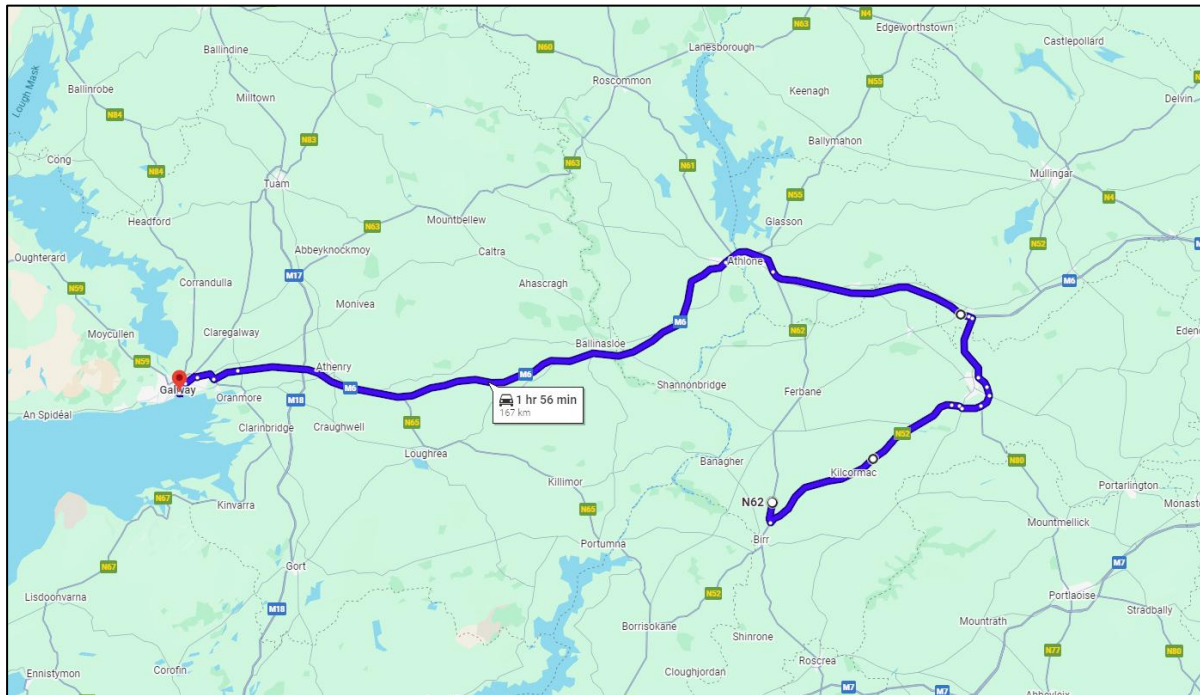


Figure 3: Indicative Turbine Component Haul Route from Galway Port

Between the Port of Galway and the M6/N52 junction, accommodation works will principally comprise temporary removal and reinstatement of street furniture, including street lighting, signs and bollards, together with temporary hardcoring of roadside verges and roundabout islands. At the R339/Connolly Avenue junction in Galway City, approximately 6m of existing wall will be permanently removed and replaced with fencing⁴. Existing fencing and other street furniture will also be temporarily removed and reinstated where required.

From the M6/N52 junction, the haul route follows the N52 around Tullamore and through Kilcormac to its junction with the N62. Accommodation works along this section will include temporary hardcoring at identified roundabouts and junctions and temporary removal and reinstatement of road signs, street furniture and lighting.

A reverse manoeuvre will be required at the N52/N62 junction to facilitate the passage of turbine delivery vehicles onto the N62⁵. This will use private lands east of the junction, where temporary hardcoring will accommodate the delivery vehicles. Associated works will include temporary removal and reinstatement of fencing, road signs and street lighting, together with removal and replacement of trees and hedgerows on the eastern side of the junction. The manoeuvre and accommodation works are detailed in the updated Route Access Survey.

Temporary accommodation works will be reinstated following completion of turbine component deliveries. Permanent works at the R339/Connolly Avenue junction will comprise the replacement of the removed wall section with fencing.

⁴ These works are assessed within the project EIAR but do not form part of the development for which permission is sought under this application. Any necessary planning permission and other consents will be obtained separately before the works commence.

⁵ The reverse manoeuvre was permitted as part of Cush Wind Farm Phase I. Its use for Phase II deliveries and the associated accommodation works are assessed in the updated Route Access Survey and the project EIAR.

4.2 PROPOSED GRID CONNECTION

The proposed grid connection includes the construction of an electrical switch room located to the southeast of the proposed wind farm. The proposed switch room will be connected to the proposed wind farm via internal wind farm underground cabling.

It is also proposed to install approximately 5km of underground electricity line ('UGL') to connect the proposed switch room to the proposed Mullanafawnia 110kV electricity substation⁶.

The location of the proposed electrical switch room and route of the proposed UGL is illustrated at **Figure 2**, above.

4.2.1 WIND FARM ELECTRICAL SWITCH ROOM

All on-site electrical and communications cables will be placed underground and be of a solid polymeric construction with either aluminium or copper conductors. All electrical cables will follow the alignment of the on-site access tracks, insofar as is practical. Trenching will be by a mechanical digger. The proposed depth of the cable trench is 1m, with a width of 0.5m. The excavated material from the cable trenches will be side-cast alongside the trench and reinstated following the laying of cable ducts.

The wind farm switch room will be constructed within the proposed development site. The purpose of this switch room building is to act as a 'node' to where the underground electrical (and communications) cabling circuits from each wind turbine will converge. The switch room will contain electrical apparatus and will transfer electricity from each individual circuit to a single circuit for its onward transmission to the Mullanafawnia 110kV electricity substation.

The switch room will be accessed via a proposed site entrance onto the L300321 local road.

4.2.2 UNDERGROUND ELECTRICITY LINE

In order to connect the proposed wind farm to the Mullanafawnia 110kV substation, it is proposed to install c. 5km of 33kV underground electricity line ('UGL'). The UGL will be installed within ducting in an excavated trench of c. 1.2m deep and c. 1.0m wide and pulled through the ducting in sections of c. 1,200m in length or depending on the length of cable required. Cable (electricity line) lengths will be connected at designated 'jointing plinths' to be installed along the route. Jointing plinths will comprise a concrete slab of c. 2m² which will be installed within the trench to provide a firm foundation for the joining of the electricity line. Traditional joint bay chambers will not be required. Jointing plinths will be located within private lands. No jointing plinths will be located within the public road corridor.

The underground electricity line will cross beneath the N52 national road, the L7006 local road and the Rapemills River at two locations using horizontal directional drilling (HDD). These crossings will avoid open trenching within the public roads and river channel.

The UGL route is located within the townlands of Eglish, Ballynaguilsha, Shanacloon,

⁶ The proposed Mullanafawnia 110kV substation is being promoted by a separate developer and is subject to a separate consenting process. It does not form part of the proposed project but is considered in the cumulative assessment within the Cush Wind Farm Phase II EIAR.

Cloncarban, Clonbeale Beg Glebe, and Mullanafawnia.

5.0 SCOPE OF THE EIAR

The EIAR will provide an assessment of effects during the construction, operation and decommissioning of the project for each the environmental topics described in this section. The EPA *Advice Notes for Preparing Environmental Impact Statements* (Draft; September 2015) set out, at Project Type 33, considerations in the preparation of an EIAR (formerly termed an 'Environmental Impact Statement' (EIS)). The EIAR for the project will have regard to the guidance set out in respect of this project type.

This section provides an overview of the scoping process which has taken place to date; including advice obtained through stakeholder engagement, public consultation and recommendations made by the EIAR project team; as well as the potential effects which have been identified and the proposed methodology for further assessment in the EIAR.

5.1 PROJECT ALTERNATIVES

Prior to the selection of the project under consideration, the Developer undertook an extensive iterative process to assess a range of alternatives at both the macro-level and micro-level. The assessment of alternatives ranged from alternative site locations, site layouts and designs; technologies; grid connection options; and haul route options. This process has so far determined that the project as currently proposed represents the most environmentally sensitive project having regard to all reasonable available alternatives.

However, the project in its current layout and design remains subject to further revision in line with continued project scoping and ongoing statutory and non-statutory consultation.

5.2 POPULATION & HUMAN HEALTH

As part the scoping process, a desk-based review of existing conditions in the area has been undertaken. It is anticipated that, during the construction phase, effects on community, recreation and tourism receptors are likely to be primarily associated with traffic, noise, air quality and water impacts. Once the project becomes operational, effects will be primarily associated with visual and noise effects.

In terms of human health, it is noted that impacts will be closely linked with other environmental aspects associated with the project which are relevant to human health, namely soils, water, air quality, noise, and radiation. Other effects may include employment effects and impacts on the local economy.

The potential effects identified above, along with potential cumulative effects with other developments, will be considered within the 'Population and Human Health' chapter of the EIAR. Effects which are not considered 'likely' or 'significant' have been scoped out from further assessment and include:-

- Safety issues connected with the operation of wind turbines;
- Health effects and wind turbine syndrome; and,
- Effects of wind farms on property values as being a matter that is not relevant to the proper planning and sustainable development of the area.

The project includes the construction and operation of electricity infrastructure. The provision of electricity infrastructure of 110kV capacity is common practice on similar

projects throughout Ireland. The radiation emitted from this type of electrical infrastructure can give rise to the generation of electromagnetic fields (EMF) which has the potential to affect human health where high levels are experienced.

Potential operational effects are limited to EMF impacts on properties (residential or other uses) within close proximity to the electricity line. The assessment of EMF in the EIAR will focus on the predicted level of the EMF and an evaluation of the predicted level against health protection standards.

The EIAR chapter will also take into consideration the results of other assessments in the EIAR which have relevance to health. Recognised health evaluation criteria will be used and accurate baseline data provided. The findings of these assessments will be cross referenced in order to avoid duplication of findings.

Employment effects and direct expenditure will be quantified using data provided by the Developer and, where necessary using standard industry data. Opportunities for local business and the local labour market to be involved in supply chain activities will be identified and, where possible, quantified.

The following sections set out the proposed approach to the preparation of the Population & Human Health chapter of the EIAR.

5.2.1 METHODOLOGY

The spatial focus of the study will be undertaken at two levels. Firstly, effects on specific community, recreation and tourism receptors will be assessed at a local level which will be defined as 5km from the boundary of the wind farm. This will be referred to as the 'Local Study Area'.

Economic effects are assessed with regard to a wider study area that takes account of a likely catchment for provision of domestically sourced goods and services relating to the construction and operation of the wind farm. This study area comprises the county within which the project is situate, i.e. County Offaly, and is referred to as the 'Wider Study Area' (WSA). Whilst it is recognised that the project is located in relatively close proximity to surrounding counties, including, most notably, Tipperary and Galway, given that County Offaly is presented as a statistical unit in CSO Census data and that the WSA is used as a measure of key population, labour market and economic statistics and trends, it was considered the most appropriate study area. It is, however, noted that the 5km LSA includes a small area of northern County Tipperary, to the southeast of the project site.

5.2.2 DESCRIPTION OF EXISTING ENVIRONMENT

A desk-based review of existing conditions in the area will be undertaken, including the following themes:-

- Population demographics;
- Labour market;
- Economic diversity and investment including local business supply chain;
- Education and skills;
- Community receptors;
- Visitor attractions (e.g. cultural heritage, fishing lakes, views);
- Accommodation and other businesses/services serving the tourism economy;
- Recreational assets (e.g. walking, cycling, views, equine use); and,

- Land use.

Data on sensitive receptors will be gathered within the Local Study Area and this will focus on community receptors, recreational assets and visitor assets. Baseline data on population demographics and employment will be gathered within the Wider Study Area. The sensitivity of each receptor or receptor group will be based on its importance or scale and the ability of the baseline to absorb or be influenced by the identified effects.

Key literature sources, in evaluating the baseline environment, will include:-

- Central Statistics Office (CSO);
- Offaly County Council – Offaly County Development Plan 2021-2027;
- Pobal Profiling GIS Data (<https://maps.pobal.ie/>);
- Fáilte Ireland data in conjunction with websites of relevant tourism sites and amenities in the area;
- Fáilte Ireland – Key Tourism Facts 2019 (2021);
- Offaly Tourism – Statement of Strategy 2017-2022;
- Offaly County Council – Offaly Economic Development Strategy and Action Plan 2022-2027;
- Offaly County Council – Local Economic and Community Plan 2023-2028 - High Level Goals and Socio Economic Statement;
- Offaly County Council – A Socio-Economic and Demographic Profile of Co. Offaly;
- Offaly County Council (in association with Bord na Mona and Coillte) - Feasibility Study on the Development of a Major Cycling Destination in the Midlands of Ireland, 2016; and
- OSI mapping and aerial photography.

5.2.3 DESCRIPTION OF LIKELY EFFECTS

The assessment will be primarily focussed on assessing the likely effects arising from the construction and operational phases. Decommissioning phase effects are considered, based on experience, to be similar to construction phase effects but of a reduced magnitude. Effects on the local economy (employment opportunities and economic output), local population, recreation and tourism assets and land use will each be assessed.

Receptor Sensitivity

There are no published standards that define receptor sensitivity relating to Population & Human Health assessments. As a general rule, the sensitivity of each receptor or receptor group will be based on its importance or scale and the ability of the baseline to absorb or be influenced by the identified effects. In assigning receptor sensitivity, consideration will be given to the following:-

- importance of the receptor e.g. local, regional, national, international;
- availability of comparable alternatives;
- ease at which the resource could be replaced;
- capacity of the resource to recover or adapt to identified impacts over a period of time; and,

- level of usage and nature of users (e.g. sensitive groups such as people with disabilities).

Based upon professional judgement, it is proposed that 4 no. levels of sensitivity are used: High; Medium, Low and Negligible.

Magnitude Criteria

The magnitude of effect will be evaluated based on the change that occurs to the baseline conditions relating to supply chains, local labour market, tourism and visitor economy, land use, and tourism and recreation assets.

It is proposed that 4 no. degrees of magnitude are used: high; medium; low and negligible.

Significance of Effect

The level of effect will be assessed by combining the magnitude of the effect and the sensitivity of the receptor. It is proposed that significance ratings of imperceptible, slight, moderate and significant will be used. Where an effect is classified as moderate, this may be considered to represent a 'significant effect' but should always be subject to professional judgement and interpretation, particularly where the sensitivity or magnitude levels are not clear or are borderline between categories or the effect is intermittent.

5.2.4 MITIGATION & MONITORING MEASURES

Mitigation measures, additional to those incorporated into the design of the project, will be considered in order to mitigate any significant adverse effects that are identified.

5.2.5 STAKEHOLDER ENGAGEMENT

As described at **Section 3.1** above, a range of stakeholders have been consulted with and invited to provide comment on the project and the scope of environmental assessments. Fáilte Ireland has provided recommendations regarding the assessment of effects on tourism.

Comments have been received from the National Office for Environmental Health Services (NEHS). The comments include reference to a series of documents which NEHS identify should be considered in the preparation of the project EIAR. With specific regard to population and human health NEHS set out that the preferred methodology for assessing likely significant effects on Population and Human Health is a source, pathway, receptor model; based on emissions through environmental media and population exposure. This approach is supported by the EPA issued National Guidance (known as the EIAR Guidance): Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022.

NEHS consider that the EIA should consider the likely significant effects on established land use and service provision and activities within communities and not individual members of communities.

No other comments regarding the assessment of Population & Human Health effects have been received to date.

5.3 BIODIVERSITY

SLR Consulting prepared an ecological scoping report in March 2022 for the original Cush Wind Farm study area, which included the locations of the three turbines now proposed as Phase II. A further ecological scoping report was prepared in August 2024 for the grid connection and associated substation arrangement under consideration at that time. These reports are included at **Annex 2**.

The project design has subsequently evolved, including changes to the proposed grid connection. The earlier reports are retained to document the scoping process and reflect the layouts and information available when prepared. The current project includes an electrical switch room and approximately 5km of underground electricity line connecting to the separately promoted Mullanafawnia 110kV substation. The substation itself does not form part of the proposed project.

The Biodiversity chapter of the EIAR and accompanying Natura Impact Statement (NIS) will address the current project design, drawing on the earlier scoping work, subsequent ecological surveys and relevant information from Cush Wind Farm Phase I.

5.3.1 METHODOLOGY

The ecological assessment will combine desk-based research, field surveys and a review of previous ecological assessments. The desk study will draw on the following sources:

- Satellite imagery;
- Environmental Protection Agency and Geological Survey Ireland mapping;
- National Parks and Wildlife Service (NPWS) information on designated sites, conservation objectives, habitats and species;
- National Biodiversity Data Centre records;
- BirdWatch Ireland information, including Irish Wetland Bird Survey data and Birds of Conservation Concern in Ireland;
- Bat Conservation Ireland records; and
- Planning records and environmental assessments for other developments relevant to the cumulative assessment.

Information obtained through project-specific data requests to NPWS, BirdWatch Ireland and Bat Conservation Ireland will also inform the assessment.

The field survey programme includes habitat mapping, protected species and invasive species surveys, breeding and non-breeding bird surveys, bat activity and roost surveys, marsh fritillary surveys, and fisheries and aquatic ecology surveys. Surveys already undertaken will inform the baseline, including ecological walkover and habitat surveys of the current grid connection route completed in June–July 2026.

Survey coverage, methods, dates and limitations will be described in the Biodiversity chapter and supporting reports. The assessment will consider the relevance of earlier survey information to the current design and identify any requirements for additional or updated surveys.

5.3.2 DESCRIPTION OF EXISTING ENVIRONMENT

The proposed wind farm site is predominantly situated on cutover bog, with other

habitats including grassland, scrub, woodland, hedgerows, treelines and drainage channels. The proposed underground electricity line principally crosses private agricultural lands, including improved agricultural grassland and associated field boundaries.

The underground electricity line will cross beneath the N52 national road, the L7006 local road and the Rapemills River at two locations using horizontal directional drilling.

The project site is outside European-designated nature conservation sites. Sites in the surrounding area include Dovegrove Callows SPA, Ridge Road, SW of Rapemills SAC, All Saints Bog SPA, All Saints Bog and Esker SAC, River Little Brosna Callows SPA, Middle Shannon Callows SPA, River Shannon Callows SAC, River Suck Callows SPA, Slieve Bloom Mountains SPA, Lough Derg (Shannon) SPA and Lough Derg, North-east Shore SAC.

European sites, Natural Heritage Areas and proposed Natural Heritage Areas will be considered within the relevant zones of influence. The assessment will examine potential connections through watercourses, habitat use and species movements, rather than proximity alone.

The Rapemills River is the principal watercourse associated with the project. Its downstream connections and the ecological condition of associated watercourses will inform the assessment of potential water-quality and aquatic ecology effects.

Bird surveys have recorded species relevant to the assessment of collision risk, disturbance and displacement, including breeding northern lapwing. Bat surveys have identified spatial and seasonal variation in activity, including periods of higher activity. These findings will inform the assessment of the proposed turbine locations and dimension range.

Dedicated marsh fritillary surveys were undertaken in July and August 2025. An isolated occurrence of devil's-bit scabious was identified outside the proposed infrastructure footprint, but no marsh fritillary larval webs, larvae or evidence of feeding were recorded. These findings will inform the assessment of habitat suitability and potential effects on this species.

5.3.3 DESCRIPTION OF LIKELY EFFECTS

The assessment will consider potential effects during construction, operation and decommissioning, including habitat loss and alteration, disturbance and displacement of fauna, changes to water quality and aquatic habitats, and collision risk to birds and bats.

Habitat loss and disturbance will be quantified using the mapped habitats and proposed works. The assessment will distinguish between permanent habitat loss, temporary disturbance and areas proposed for reinstatement or enhancement. It will also consider the relationship between the project and the proposed rehabilitation of Galros Bog.

The bird assessment will draw on the multi-season survey programme and include collision-risk modelling for the proposed turbine dimension range. Potential disturbance, displacement and barrier effects will be examined alongside collision risk. Particular consideration will be given to breeding northern lapwing, including the recorded territory locations and their relationship to proposed infrastructure and construction activities.

The bat assessment will consider the species recorded, seasonal and spatial activity

patterns, roosting opportunities, turbine dimensions and separation from surrounding habitat features. These factors will inform the assessment of habitat loss, disturbance and potential collision effects.

Potential effects on other protected fauna will be assessed using survey records, habitat suitability and the nature and location of the proposed works. The assessment will also consider the risk of introducing or spreading invasive species.

Aquatic ecology effects will be assessed in conjunction with the water assessment and proposed drainage arrangements. Matters to be examined include sediment release, accidental pollution, changes to drainage and the construction methods proposed at watercourse crossings.

Potential effects on European sites will be examined through Appropriate Assessment screening and the NIS, having regard to relevant conservation objectives. This work will address the project as a whole, including the proposed wind farm, underground electricity line and turbine haul route accommodation works.

Cumulative ecological effects will be assessed with other relevant developments and activities, including Cush Wind Farm Phase I and the separately promoted Mullanafawnia substation.

5.3.4 MITIGATION & MONITORING MEASURES

The assessment will identify measures to avoid or reduce adverse ecological effects, following the mitigation hierarchy. These will address the design, construction, operation and decommissioning of the project.

Measures to be considered will include protection of retained habitats, construction pollution controls, appropriate timing and supervision of works, pre-construction surveys, protection of breeding birds and other fauna, habitat reinstatement and biosecurity controls.

The bat assessment will establish appropriate separation distances between turbines and relevant habitat features, together with any habitat management requirements. The need for additional mitigation will be determined through the assessment.

A Habitat and Species Management Plan will set out the proposed habitat reinstatement, planting, enhancement and management measures, including their relationship with the wider bog rehabilitation proposals.

Monitoring requirements will be specified to verify assessment predictions, establish the effectiveness of mitigation and identify whether further measures are necessary. The EIAR and supporting reports will define the relevant responsibilities, timing, reporting and review arrangements.

5.3.5 STAKEHOLDER ENGAGEMENT

As described at **Section 3.1**, relevant stakeholders have been consulted and invited to comment on the project and the scope of the environmental assessments.

The Development Applications Unit within the Department of Housing, Local Government and Heritage provided nature conservation comments concerning European sites and the potential use of surrounding habitats by Greenland white-fronted goose and whooper swan.

Its recommendations included obtaining historical NPWS records and surveying suitable habitats within at least 600m of the application site boundary to establish the

presence, distribution and abundance of these species. Where relevant, potential collision mortality, disturbance, displacement and barrier effects will be assessed in the context of the populations associated with the relevant SPAs.

These comments will inform the survey programme and assessment. Relevant information obtained through the NPWS data request, received in September 2026, will also be considered. The Biodiversity chapter will record how the consultation recommendations have been addressed.

Bat Conservation Ireland advised that it does not comment on individual planning applications and recommended adherence to relevant best-practice guidance. The bat assessment will describe the guidance followed and the survey and assessment methods applied.

5.4 LAND & SOIL

The Land & Soil chapter will address the current project design, including the proposed wind farm, electrical switch room, underground electricity line and turbine haul route accommodation works. The assessment will draw on geological mapping, previous investigations undertaken for Cush Wind Farm Phase I, project-specific site investigations and the Peat Stability Assessment.

The baseline assessment will describe soils, peat, subsoils, bedrock, geological heritage and existing ground conditions. It will identify investigation coverage and limitations, including the methods used where access restricted conventional investigations.

Potential effects to be assessed include excavation and disturbance of soils and peat, changes to land use, peat stability, erosion, accidental contamination, spoil deposition and effects on geological heritage. Particular consideration will be given to the proposed underground electricity line crossings of the mapped Kilcormac Esker County Geological Site.

The assessment will distinguish between the permanent infrastructure footprint, temporary working areas and peat/spoil deposition areas. It will consider the proposed foundation and track construction methods, the management of excavated materials and the relationship with the draft Galros Bog Rehabilitation Plan.

Appropriate mitigation and monitoring will be identified, including excavation controls, peat/spoil management, pollution prevention, reinstatement and geotechnical supervision. Construction, operation and decommissioning effects will be assessed, together with relevant cumulative effects.

5.4.1 STAKEHOLDER ENGAGEMENT

As described at **Section 3.1**, relevant stakeholders have been consulted and invited to comment on the project and the scope of the environmental assessments.

Geological Survey Ireland identified a County Geological Site adjacent to and partially within the project boundary presented for consultation. It requested consideration of potential effects on geological heritage and copies of reports detailing site investigations. Its mapping and datasets will inform the assessment of the current project layout.

The National Office for Environmental Health Services recommended consideration of bedrock, overburden, groundwater vulnerability, aquifers, groundwater flows and

catchments when assessing potential effects on drinking water sources. It also recommended a detailed Peat Stability/Geotechnical Assessment.

These recommendations will inform the Land & Soil and Water assessments. The EIAR will explain how relevant consultation matters have been addressed.

5.5 WATER

The Water chapter will describe surface water drainage, groundwater conditions, receiving watercourses, water quality, water supplies and flood risk. It will draw on desk-based information, site walkovers, drainage mapping, water-quality sampling and relevant site investigations.

The Rapemills River and associated drainage network will be central to the assessment. Potential pathways to downstream ecological receptors and designated sites will be considered in conjunction with the Biodiversity chapter and NIS.

The assessment will examine potential effects arising from excavation, drainage, peat/spoil deposition, sediment release, accidental pollution and changes to runoff or groundwater conditions. It will address the proposed underground electricity line, including horizontal directional drilling beneath the N52, L7006 and the Rapemills River at two locations.

A water-balance assessment will examine potential changes to runoff. Flood risk will be assessed for both permanent infrastructure and temporary construction activities. The assessment will also consider the project's relationship with the proposed rehabilitation of Galros Bog and the requirements of the Water Framework Directive.

A Water Constraints Map will identify relevant water features and constraints. Drainage, surface water management, pollution prevention, water-quality monitoring and incident-response requirements will be developed through the assessment and incorporated into the project's construction management documentation.

5.5.1 STAKEHOLDER ENGAGEMENT

Uisce Éireann identified matters for consideration concerning drinking water sources, hydrological and hydrogeological pathways, water services capacity, receiving waters and the protection of existing infrastructure.

Its recommendations include consideration of construction materials and backfilling, potential effects on water abstraction and discharge arrangements, separation from public infrastructure and any physical interference with its assets.

Relevant water-related recommendations from Geological Survey Ireland and the National Office for Environmental Health Services will also inform the assessment. Their applicability to the proposed water supply, drainage arrangements and current project layout will be examined and addressed in the EIAR.

5.6 AIR QUALITY & CLIMATE

Air Separate Air Quality and Climate chapters will be prepared. The Air Quality chapter will address potential changes to local air quality, while the Climate chapter will assess greenhouse gas emissions and the project's vulnerability to climate change.

The assessments will identify the applicable legislation, policy and technical guidance, together with the assessment boundaries, assumptions and limitations.

5.6.1 METHODOLOGY

The assessment methodology will include the following:-

Air Quality

It The assessment will follow relevant Institute of Air Quality Management guidance on construction dust, Transport Infrastructure Ireland air-quality guidance and EPA guidance on the preparation of EIARs.

The methodology will include:

- Characterisation of baseline air quality using relevant monitoring and published information;
- Identification of sensitive human and ecological receptors;
- Assessment of construction dust risks associated with earthworks, construction activities and the movement of vehicles and materials;
- Screening of traffic emissions against the relevant criteria to determine whether detailed assessment is required;
- Consideration of potential air-quality benefits associated with renewable electricity generation; and
- Identification of appropriate mitigation and monitoring.

The dust assessment will consider the scale and nature of the works, receptor sensitivity and the potential for dust soiling, human-health effects and ecological effects. Construction traffic emissions and dust associated with vehicles will be considered separately.

Climate

The The Climate chapter will address two related matters:

- The project's effects on climate through greenhouse gas emissions and renewable electricity generation; and
- The potential effects of climate change on the project, including its vulnerability and resilience.

The assessment will have regard to relevant TII climate guidance, greenhouse gas assessment and climate-resilience guidance, EPA guidance and applicable national climate policy.

The greenhouse gas assessment will define its scope and boundaries, establish the baseline and identify relevant emissions sources. Emissions associated with construction materials, transport, construction activities and operation will be assessed using appropriate activity data and emissions factors.

Turbine manufacture and end-of-life will be considered using available manufacturer lifecycle information, with the scope, applicability and limitations of those data explained. The assessment will distinguish between quantified project emissions and information used to provide wider lifecycle context.

Potential emissions savings from renewable electricity generation will be assessed using stated assumptions concerning generating capacity, electricity output, project life and the electricity displaced.

The climate change risk assessment will consider relevant current and future climate

hazards, the sensitivity and exposure of project assets, and any adaptation measures required. It will draw on other assessments, including flood risk, drainage and ground conditions.

5.6.2 DESCRIPTION OF EXISTING ENVIRONMENT

A Baseline air quality will be characterised using EPA monitoring information and other relevant published data, having regard to the rural setting, nearby roads and sensitive receptors.

The climate baseline will draw on relevant meteorological records and climate projections. Conditions to be considered will include rainfall, temperature, wind and extreme weather events over the proposed project life.

5.6.3 DESCRIPTION OF LIKELY EFFECTS

The Air Quality chapter will assess potential dust and emissions effects during construction, operation and decommissioning. It will also consider relevant cumulative effects and potential benefits from the displacement of fossil-fuel electricity generation.

The Climate chapter will assess greenhouse gas emissions and potential savings, together with the project's vulnerability to changing climatic conditions.

Each assessment will use its relevant topic-specific significance methodology. Construction dust will be assessed using the applicable dust-risk approach; greenhouse gas significance will be considered in the context of relevant climate objectives and guidance; and climate resilience will be assessed through the sensitivity, exposure and risk of project assets.

The EIAR will explain these methods and the basis for determining significance.

5.6.4 MITIGATION & MONITORING MEASURES

Measures will be identified to prevent or reduce construction dust, manage vehicle-related emissions and minimise unnecessary fuel and material consumption. Relevant requirements will be incorporated into the Construction Environmental Management Plan (CEMP).

The Climate chapter will identify opportunities to reduce greenhouse gas emissions and any adaptation measures required to improve resilience. Monitoring and review requirements will be specified where appropriate.

5.6.5 STAKEHOLDER ENGAGEMENT

The National Office for Environmental Health Services identified construction dust as a potential issue for sensitive receptors and recommended that the EIAR include a CEMP setting out dust control and mitigation measures.

These recommendations will inform the construction dust assessment and proposed management arrangements.

5.7 LANDSCAPE

A Landscape Scoping Report is provided at **Annex 3**. It describes the initial landscape and visual context and identifies potential locations for the preparation of

photomontages.

The Landscape and Visual Impact Assessment will examine the current project design and proposed turbine dimension range. It will characterise landscape character, landscape sensitivity and the visual setting using desk studies, fieldwork, mapping and relevant landscape policy.

The assessment will consider residential receptors, settlements, transport routes, recreational locations, designated scenic views and other representative viewpoints. Visibility mapping and photomontages will inform the assessment, including locations from which the project is likely to be most visually prominent.

Landscape effects and visual effects will be assessed separately. The assessment will consider construction, operation and decommissioning, together with cumulative effects involving Cush Wind Farm Phase I and other relevant developments.

The basis for selecting representative turbine dimensions and viewpoints will be explained. Opportunities to avoid or reduce effects through design, siting, reinstatement and other appropriate measures will be examined.

5.7.1 STAKEHOLDER ENGAGEMENT

Relevant consultation responses and landscape policy requirements will inform the assessment and viewpoint selection. The EIAR will record how applicable comments have been considered.

5.8 CULTURAL HERITAGE

An Archaeological, Architectural and Cultural Heritage Scoping Report is enclosed at **Annex 4**. It provides an initial evaluation of the heritage resource and identifies matters requiring consideration in the EIAR.

The assessment will draw on archaeological and architectural records, historical mapping, previous investigations and field inspection. It will consider recorded monuments, protected structures, structures included in the National Inventory of Architectural Heritage and previously unrecorded remains.

The assessment will incorporate the specialist peatland walkover survey undertaken in April 2026 and the geophysical survey of the proposed underground electricity line undertaken in July 2026. Their findings will inform the assessment of the current design and any requirements for further investigation.

Potential effects will include direct disturbance of archaeological remains, effects on previously unrecorded deposits and indirect effects on the setting of heritage assets. Construction, operation and decommissioning will be considered, together with relevant cumulative effects.

Mitigation requirements will be developed in response to the findings. These will address avoidance, further investigation, archaeological monitoring, recording and procedures for unexpected discoveries, as appropriate.

5.8.1 STAKEHOLDER ENGAGEMENT

The Development Applications Unit, through the National Monuments Service, recommended an archaeological impact assessment addressing all project stages and identifying appropriate mitigation.

Its recommendations include desk-based and field studies, with geophysical survey,

peatland survey and archaeological test excavation where appropriate to establish archaeological potential.

The assessment will explain how these recommendations have informed the investigations and proposed mitigation.

5.9 NOISE & VIBRATION

The noise and vibration assessment will identify relevant noise-sensitive locations and establish representative background noise conditions. It will distinguish background sound from noise attributable to existing wind turbines when deriving assessment criteria.

Construction noise and vibration will be assessed having regard to the proposed activities, plant, working hours, traffic and proximity to sensitive receptors. Relevant construction noise and vibration guidance will inform the assessment.

Operation phase noise modelling will address the proposed turbine dimension range using appropriate turbine sound-power data. The assessment will identify the turbine characteristics governing noise predictions at different wind speeds and explain the modelling assumptions.

Cumulative noise will be assessed with Cush Wind Farm Phase I and other relevant wind farms. Any reliance on conditioned noise limits for other developments will be expressly identified and its assessment basis explained.

The EIAR will report predicted levels, comparisons with the adopted criteria and any mitigation required. Measures will be specified for implementation and subsequent verification, with responsibility for measures associated with the proposed project clearly distinguished from the obligations of other developments.

5.9.1 STAKEHOLDER ENGAGEMENT

The National Office for Environmental Health Services recommended that potential noise and vibration effects at sensitive locations be clearly identified.

It also advised that existing turbine noise should not be included within the background levels used for assessment and that predicted changes during construction and operation should be examined.

These recommendations will inform the baseline surveys, assessment criteria, modelling and reporting.

5.10 SHADOW FLICKER

5.10.1 Methodology

The assessment will consider existing and permitted dwellings within 2,000m of the proposed turbines. These receptors will be identified through mapping, planning records and site verification and presented on the dwellings map accompanying the EIAR.

Shadow flicker modelling will examine the proposed turbine dimension range, receptor locations, terrain and the relationship between turbine position and solar movement.

The assessment will distinguish theoretical predictions from estimates taking account of relevant meteorological and operating assumptions. Cumulative effects with Cush Wind Farm Phase I and other relevant turbines will also be examined.

Predictions will be assessed against the applicable guidance, and the need for mitigation will be established.

5.10.2 Description of the Existing Environment

The surrounding area has a dispersed rural settlement pattern. Existing and permitted dwellings within the study area will be identified and their status verified. The assessment will use a verified receptor schedule rather than relying on a preliminary dwelling count.

5.10.3 Description of the Potential Effects

Shadow flicker can occur when rotating turbine blades periodically interrupt direct sunlight reaching a receptor. Its occurrence depends on turbine and receptor geometry, time of day and year, sunshine and turbine operation. The assessment will identify the potential frequency and duration of effects at relevant dwellings and evaluate their significance.

5.10.4 Mitigation & Monitoring Measures

Where required, a shadow flicker control system will provide for turbine shutdown during the relevant combinations of solar position, sunshine and turbine operation.

The EIAR will specify the required control arrangements, implementation responsibilities and procedures for monitoring, reporting and responding to complaints. The assessment will establish the mitigation necessary to meet the adopted criteria.

5.10.5 Stakeholder Engagement

The National Office for Environmental Health Services recommended turbine technology capable of shutdown during periods of shadow flicker and expressed the view that dwellings should not be exposed to shadow flicker.

This recommendation will be considered in defining the assessment approach and proposed control measures.

5.11 MATERIAL ASSETS

5.11.1 Transport & Access

Methodology

The assessment will draw on road-network information, traffic data, site inspections and the updated Route Access Survey prepared for the project.

The turbine delivery assessment will address a rotor diameter of up to 175m and the associated transport configuration. Swept-path analysis will establish the requirements at junctions, entrances and internal access tracks and identify temporary and permanent accommodation works.

Construction traffic estimates will be derived from the proposed works, material quantities, delivery requirements and construction programme. The assessment will distinguish deliveries from vehicle movements and examine both typical activity and

short-duration peaks, including concrete pours.

Description of the Existing Environment

The anticipated turbine component delivery route is from the Port of Galway via the N6, M6, N52 and N62. The local road network also includes the L300321, which provides access to the permitted Phase I operation phase entrance and the proposed switch room entrance.

The assessment will describe the relevant roads, junctions, entrances, road conditions and existing traffic. It will consider the proposed use of shared Phase I infrastructure and the requirements of underground electricity line crossings.

Description of the Likely Effects

Potential effects to be assessed include:

- Increased traffic and changes in vehicle composition;
- Temporary delays and disruption;
- Effects on road safety and access;
- Effects on road surfaces and structures; and
- Effects associated with turbine delivery accommodation works.

Construction, operation and decommissioning traffic will be considered. Cumulative assessment will address potential overlap with Phase I and other relevant construction activity.

Mitigation & Monitoring Measures

The assessment will identify measures for delivery scheduling, traffic control, access management, road protection and reinstatement.

A Traffic Management Plan will be developed and agreed with the relevant authorities before construction. It will address construction routes, abnormal-load deliveries, coordination with Phase I, emergency access and applicable permissions and notification procedures.

Stakeholder Engagement

Transport Infrastructure Ireland recommended assessment of effects on the national road network, application of relevant guidance and consultation with road authorities and relevant road operators.

Its recommendations also address traffic assessment, road safety, the suitability of structures along delivery routes, protection and reinstatement of road surfaces, and electricity infrastructure within the national road network.

The Department of Transport identified matters concerning the placement of electricity infrastructure within public roads, including structural effects, cover, maintenance, future services and the consideration of alternative routes and technologies.

These recommendations will inform the assessment of the delivery routes and electricity line crossings. The EIAR will explain their relevance to the current design and how they have been addressed.

5.12.1 Telecommunications

Methodology

The assessment will identify telecommunications infrastructure and services potentially affected by the project, drawing on consultation with operators, regulatory bodies and relevant service providers.

Point-to-point radio links and other identified constraints will be examined against the proposed turbine locations and dimension range. Where necessary, specialist assessment will establish appropriate separation or mitigation requirements.

A specialist Radio Telescope Impact Assessment will examine potential effects on the Irish Low Frequency Array (I-LOFAR) at Birr Castle, including the combined influence of Cush Wind Farm Phases I and II.

Description of the Existing Environment

Telecommunications infrastructure is present in the wider area, and I-LOFAR operates within the grounds of Birr Castle.

The proposed Phase II turbines are located further from I-LOFAR than the closest permitted Phase I turbines. The assessment will identify the relevant turbine-to-facility distances and distinguish these from distances measured to the wider project boundary.

Description of the Likely Effects

The assessment will examine potential interference with telecommunications links and broadcast reception.

For I-LOFAR, the specialist assessment will consider:

- Physical obstruction of incoming signals;
- Reflection or scattering of terrestrial radio-frequency signals; and
- Radio-frequency emissions from turbine equipment.

The EIAR will record consultation outcomes and distinguish operator responses from the findings of the specialist assessment.

Mitigation & Monitoring Measures

Where interference risks are identified, suitable mitigation will be examined in consultation with the affected operator.

The assessment will address the application of the existing 2m protocol to Phase II and describe the arrangements for investigating complaints and remedying interference attributable to the project.

Any further mitigation or monitoring requirements will be specified in the EIAR.

6.0 CUMULATIVE ASSESSMENT

Each topic assessment will consider the project as a whole, including the proposed wind farm, electrical switch room, underground electricity line and turbine haul route accommodation works. Interactions between these components will be assessed where relevant.

Separately, cumulative effects will be assessed with other existing, permitted and relevant proposed developments for which sufficient information is available. These will include Cush Wind Farm Phase I, the separately promoted Mullanafawnia substation, relevant wind farms and other developments or activities sharing potential receptors or effect pathways.

The cumulative assessment will consider the relevant spatial and temporal relationships, including potential overlap between construction programmes and combined effects during operation.

The developments included, assessment assumptions and limitations will be identified within each topic chapter. Where potentially significant cumulative effects are identified, appropriate mitigation and monitoring will be specified.

7.0 ASSESSMENT OF INTERACTIONS

The interactions between effects on different environmental factors will also be addressed, as relevant, throughout the EIAR by ensuring that effects are cross-referenced between topics, thus reducing the need to duplicate coverage of such topics. Close coordination and management within the EIA project team, and careful read-across editing, will ensure that assessors are vigilant for complex interactions (direct, indirect, secondary and cumulative) and, where they are likely to arise, they are adequately identified and assessed. This includes interactions between effects, and possible cumulative effects, arising from the mitigation measures proposed that could magnify effects through the interaction or accumulation of effects.

8.0 APPROPRIATE ASSESSMENT

As a separate but interrelated process to EIA, potential effects on European sites designated under the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC) will be examined through Appropriate Assessment (AA) screening and a Natura Impact Statement (NIS).

An AA Screening Report will be prepared to inform Offaly County Council's screening determination under Article 6(3) of the Habitats Directive and section 177U of the 2000 Planning Act. Screening will consider whether likely significant effects on European sites can be excluded on the basis of objective scientific information, either individually or in combination with other plans or projects. Measures intended to avoid or reduce harmful effects on European sites will not be relied upon at screening.

The assessment will identify European sites within the project's potential zone of influence, having regard to their conservation objectives and possible connections through watercourses, habitats and species movements. Sites within 20km will provide an initial search area, with sites beyond this distance considered where relevant pathways exist. The assessment will address construction, operation and decommissioning of the whole project, including the proposed wind farm, underground electricity line and turbine haul route accommodation works.

A NIS will be prepared and submitted with the planning application to inform the Council's Stage 2 Appropriate Assessment under section 177V of the 2000 Planning Act. It will examine potential effects on the integrity of relevant European sites, alone and in combination with other plans or projects, in view of their conservation objectives.

Where necessary, the NIS will identify measures to avoid or reduce adverse effects. These measures will be described in sufficient detail to establish their implementation,

effectiveness, timing, monitoring and enforcement arrangements. The assessment will examine whether adverse effects on site integrity can be excluded beyond reasonable scientific doubt.

The AA Screening Report and NIS will be presented together in a standalone document accompanying the EIAR. The screening and Appropriate Assessment determinations will remain the responsibility of Offaly County Council.

The Biodiversity chapter of the EIAR (**Chapter 5**) will address the wider ecological effects of the project. It will cross-reference the NIS and incorporate its relevant findings without repeating the detailed assessment of European sites.

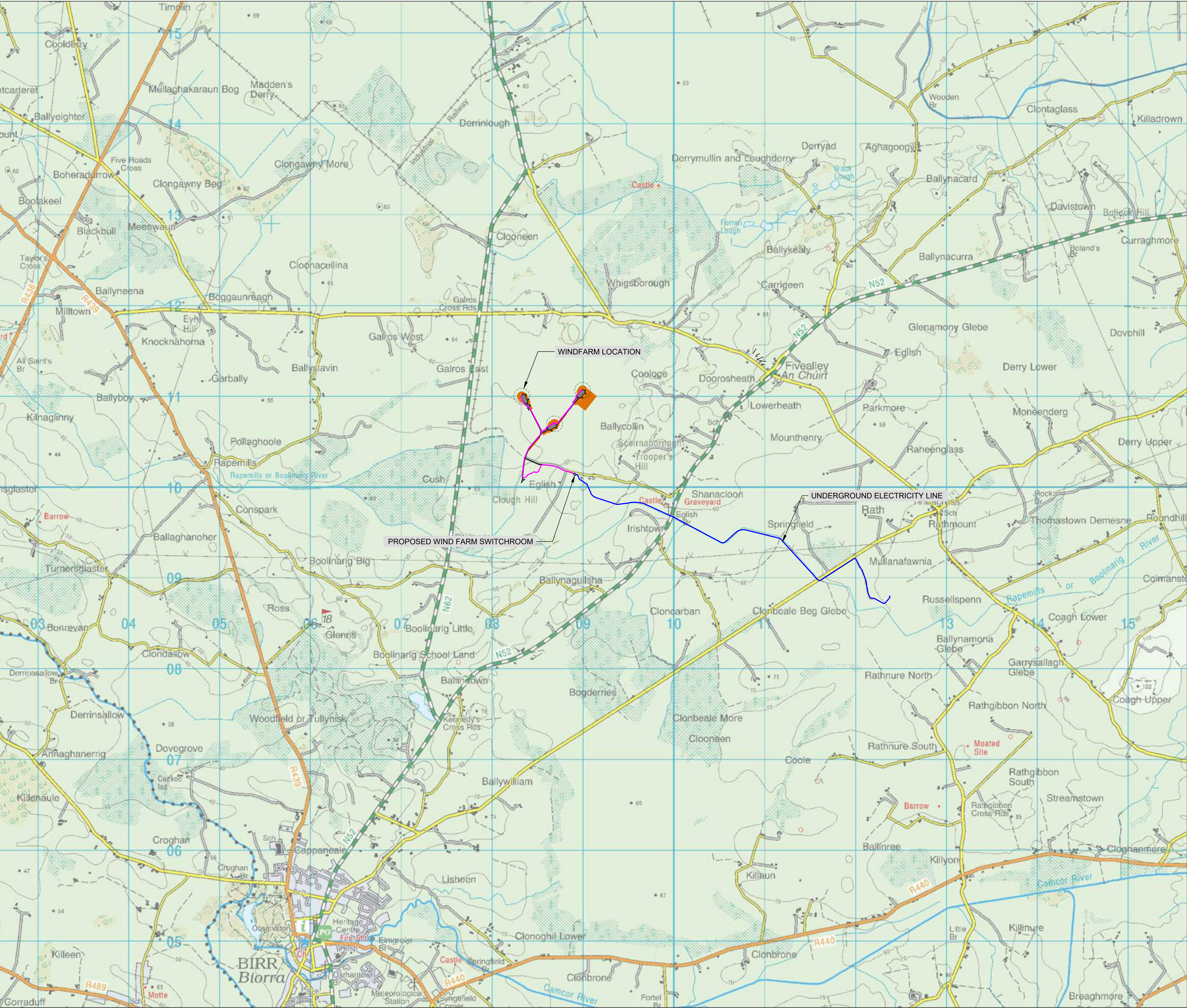
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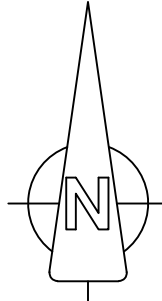
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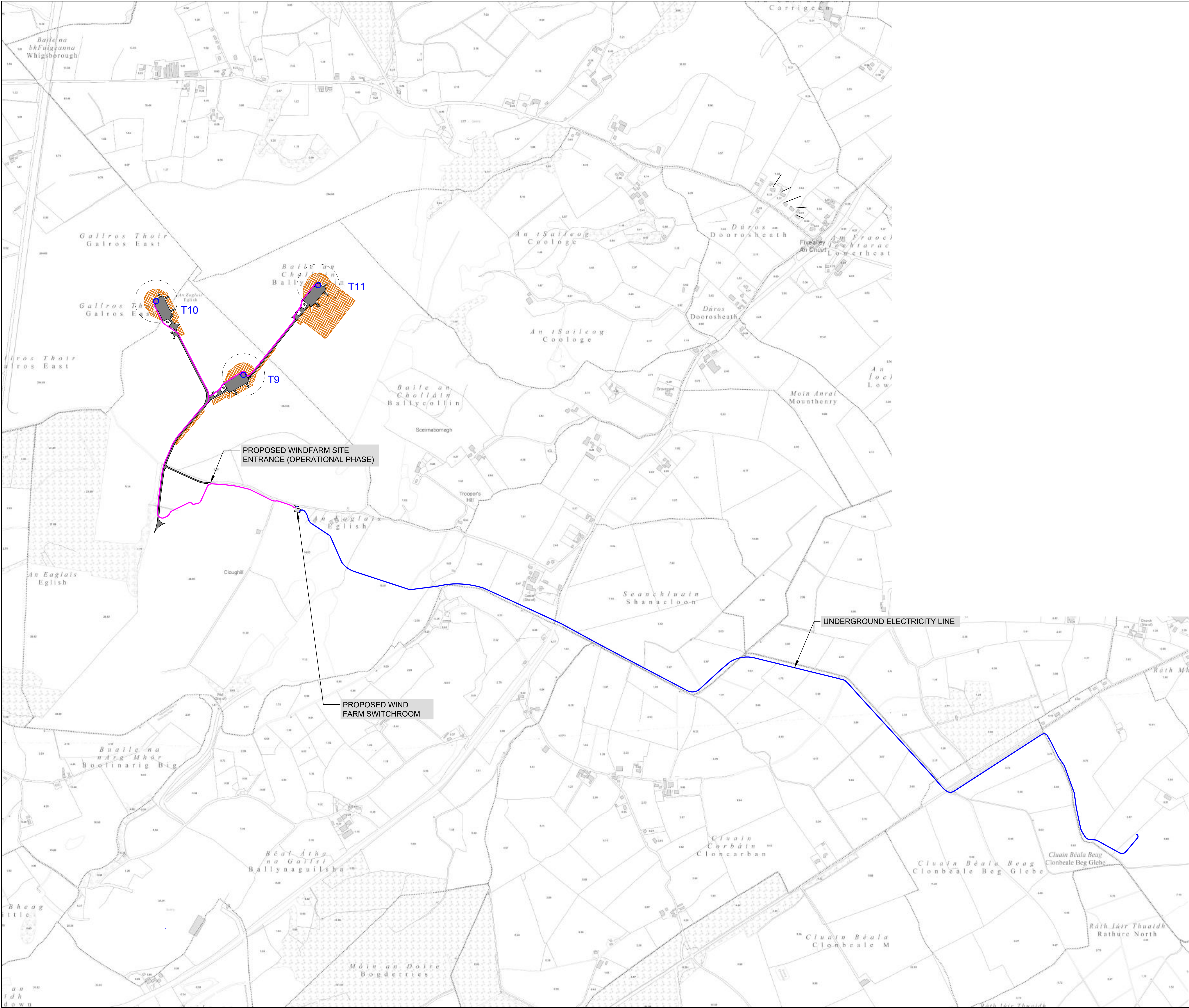
ANNEX 4 – HERITAGE SCOPING REPORT



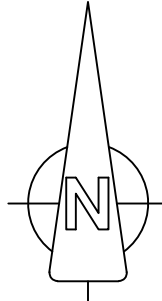
- Legend:**
- Internal Wind Farm Electrical and Communications Cabling
 - Underground Electricity Line
 - Access Track & Hardstanding
 - Spoil Deposition Areas
 - Rotor Swept Area



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Drawing No:	CUSH001_EIAR_3.1		Stage: EIAR
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- Legend:
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 - Underground Electricity Line
 - Access Track & Hardstanding
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 - Rotor Swept Area



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ANNEX 2 – BIODIVERSITY SCOPING REPORTS

CUSH WIND FARM

Scoping Report - Ecology

Prepared for: Galetch Energy Services

Client Ref: 00581

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March 2022



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28/03/2022	1	Sinéad Clifford	Richard Arnold	Richard Arnold	Draft	For client review

BASIS OF REPORT

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1.0 Biodiversity

This section outlines the likely ecological constraints present at the proposed Cush Wind Farm, and their impact on the feasibility of the proposed development(s).

This was prepared by Sinéad Clifford and reviewed by Richard Arnold. Sinéad is Senior Ecologist with SLR. Sinéad holds a BSc (Hons) Wildlife Biology from Institute of Technology Tralee, and a Certificate in Ecological Consultancy (Distinction) from Ecology Training UK (formerly Acorn Ecology). Sinéad has worked in ecological consultancy since 2018. Sinéad's specialist areas are in bat ecology, mammal survey, Geographical Information Systems (GIS), habitat survey, mapping and classification. She also has an excellent understanding and experience in invasive species survey. Sinéad has prepared ecological reports for a wide range of diverse projects during her career.

Richard Arnold BSc (Hons) MRes MCIEEM CEnv - Richard Arnold is a Technical Director with SLR. Richard has a BSc (Hons) in Ecology, an MRes in Environmental Science, is a full member of CIEEM and a Chartered Environmentalist. Richard has 23 years of experience as a consultant ecologist, including projects of all sizes and stages of development in the UK and Ireland.

1.1 Relevant Legislation and Policy

1.1.1 Environmental Impact Assessment

- Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment 1985, as amended in 1997 (Council Directive 97/11/EC), 2003 (2003/35/EC) and 2009 (2009/31/EC), codified in 2011 (2011/92/EU) and amended again in 2014 (2014/52/EU) (the EIA directive)
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, as amended

1.1.2 Habitats and Species

- European Union Habitats Directive, (1992). Council Directives 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
- European Union Birds Directive (2009) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
- European Communities (Birds and Natural Habitats) Regulations, 2011, as amended.
- Wildlife Act, 1976, as amended
- Wildlife (Amendment) Act, 2000, 2010, 2012
- Flora (Protection) Order 2015
- Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, as amended, together with Commission Implementing Regulation (EU) 2016/1141 and Implementing Regulation (EU) 2019/1262
- The Heritage Act 2018

1.1.3 Water

- European Communities (Water policy) Regulations, 2003, as amended
- European Communities Environmental Objectives (Surface Waters) Regulations 2009

1.1.4 Environmental Liabilities

- European Communities (Environmental Liability) Regulations 2008

1.1.5 Relevant Policies

- Offaly County Development Plan 2021-2027, Wind Energy Strategy¹
- Chapter 4 (Biodiversity and Landscape) of the Offaly County Development Plan 2021 – 2027²

¹ <https://www.offaly.ie/eng/Services/Planning/County-Development-Plan-2021-2027/Stage-4-Final-Plan/Wind%20Energy%20Strategy.pdf>

² <https://www.offaly.ie/eng/Services/Planning/County-Development-Plan-2021-2027/Stage-4-Final-Plan/Chapter%204%20-%20Biodiversity%20and%20Landscape.pdf>

2.0 Methodology

2.1 Desk Study

We have carried out a desk study to inform the biodiversity input to the scoping report for the proposed Cush Wind Farm. The desk study involved using online resources to collate information on areas designated for nature conservation and previous ecological studies undertaken for other projects in the wider local area.

The following online and other resources were accessed as part of the desk study, searching for all relevant records up to 20km radius of the site boundary:

- Satellite imagery³
- Environmental Protection Agency (EPA) Maps⁴ were accessed for other environmental information relevant to preparation of this report.
- Design drawings and the project description of the proposed Cush Wind Farm prepared by Galetech Energy Services.
- National Parks and Wildlife Service⁵ and the National Biodiversity Data Centre (NBDC)⁶ online resources were accessed for information on sites designated for nature conservation and information on protected habitats and species. Only records of protected species for the past 10 years are considered within this report as older records are unlikely to still be relevant given their age and the changes in land management that is likely to have occurred in the intervening period. Environmental Protection Agency (EPA) Maps were accessed for other environmental information, such as surface water features, relevant to preparation of this report.
- Offaly County Council planning portal⁷ and myplan.ie⁸ were accessed for information on other permitted or proposed projects and plans within 15km, including associated environmental and ecological assessments.
- The BirdWatch Ireland website⁹ was accessed for information on birds of conservation concern from the last 10 years. Birds of Conservation Concern in Ireland (BoCCI), published by BirdWatch Ireland and the RSPB NI, is a list of priority bird species for conservation action on the island of Ireland. The BoCCI lists birds which breed and/or winter in Ireland and classifies them into three separate lists; Red, Amber and Green; based on the conservation status of the bird and hence their conservation priority. Birds on the Red List are those of highest conservation concern, Amber List are of medium conservation concern and Green List are not considered threatened. Whilst all bird species are protected under the Wildlife Acts 1976 – 2018, only records of species that are Red or Amber-listed on BoCCI or listed on Annex 1 of the Birds Directive were sought.
- Records of protected flora and fauna within 2km were sought from records held by the NBDC.

³ <https://www.google.ie/maps> (last accessed 1st March 2022)

⁴ <http://gis.epa.ie/> (last accessed 1st March 2022)

⁵ <https://www.npws.ie/> (last accessed 1st March 2022)

⁶ <https://maps.biodiversityireland.ie/> (last accessed 1st March 2022)

⁷ <https://www.eplanning.ie/OffalyCC/searchtypes> (last accessed 1st March 2022)

⁸ <https://myplan.ie/> (last accessed 1st March 2022)

⁹ <https://birdwatchireland.ie/> (last accessed 1st March 2022)

2.2 Limitations

2.2.1 Desk Study

Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that important habitats or protected species not identified during the data search do in fact occur within the vicinity of the site. Interpretation of maps and aerial photography has been conducted in good faith, using recent imagery, but it has not been possible to verify the accuracy of any statements relating to land use and habitat context outside of the field study area.

2.2.2 Field Survey(s)

No surveys were undertaken to inform this report. The site visit was high-level in nature and did not assess habitats and species. As such, it should not be considered in lieu of targeted, detailed ecological surveys.

3.0 Baseline Ecological Conditions

This section sets out the baseline conditions for the ecological features considered within the proposed project site using the findings of the desk study.

3.1 Designated Sites

3.1.1 Natura 2000 Sites

Wind Farm Site

There are 21 Natura 2000 sites within 20km of the proposed wind farm. The Site is not situated within any Natura 2000 site. There are two Natura 2000 sites within 2km of the Site boundary, namely Dovegrove Callows SPA (004137) and Ridge Road, SW of Rapemills SAC (000919).

There is a direct hydrological connection to seven Natura 2000 sites, namely Middle Shannon Callows SPA, River Little Brosna Callows SPA, All Saints Bog SPA, Lough Derg (Shannon) SPA, All Saints Bog and Esker SAC, River Shannon Callows SAC, and Lough Derg, North-east Shore SAC. Rapemills river flows through the Site westward where it drains to River Shannon via (IE_SH_25R010500). It is through River Shannon and its tributaries that the Site is then connected to these Natura 2000 sites.

There is a potential for a hydrological connection to several Natura 2000 sites via groundwater as these sites are situated within the same catchment as the proposed Site. These are Dovegrove Callows SPA, Ridge Road, SW of Rapemills SAC, Ballyduff/Clonfinane Bog SAC, Lisduff Fen SAC, Island Fen SAC, Sharavogue Bog SAC, Redwood Bog SAC, Slieve Bloom Mountains SPA, Moyclare Bog SAC, Slieve Bloom Mountains SAC, Ferbane Bog SAC, and Fin Lough (Offaly) SAC.

There are seven SPAs within 20km of the proposed Wind Farm. The Site is within the Core Foraging Range for a number of Species of Conservation Interest (SCI) for which these SPAs are designated (outlined in Table 3-1 below). Of the SCI for which these SPA's are designated, there is limited suitable habitat present within the Site for the following SCI:

- Black-headed gull
- Golden plover
- Greenland white-fronted goose
- Whooper swan

The habitats within the Site may be used by these species on a limited basis and during suitable conditions (e.g. following periods of heavy rainfall).

Hen Harrier is an SCI for Slieve Bloom Mountains SPA. Hen Harrier has been recorded within the proposed wind farm site during the 2020/2021 bird survey period.

There is a lack of hydrological or ecological connection between the proposed site and Arragh More (Derrybreen) Bog SAC, Kilcarren-Firville Bog SAC, Liskeenán Fen SAC, Clonaslee Eskers and Derry Bog SAC, and Scohaboy (Sopwell) Bog SAC.

Natura 2000 sites within 20km of the proposed site are presented in Table 3-1.

Table 3-1 Natura 2000 sites within 20km – Wind Farm Site

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Dovegrove Callows SPA	004137	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	1.48	<p>There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).</p> <p>The Site is within the Core Foraging Range (CFR) for this Species of Conservation Interest (SCI), i.e. 5-8km.</p>
Ridge Road, SW of Rapemills SAC	000919	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	1.80	<p>There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).</p>
River Little Brosna Callows SPA	004086	<p>Whooper Swan (<i>Cygnus cygnus</i>) [A038]</p> <p>Wigeon (<i>Anas penelope</i>) [A050]</p> <p>Teal (<i>Anas crecca</i>) [A052]</p> <p>Pintail (<i>Anas acuta</i>) [A054]</p> <p>Shoveler (<i>Anas clypeata</i>) [A056]</p> <p>Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p> <p>Lapwing (<i>Vanellus vanellus</i>) [A142]</p> <p>Black-tailed Godwit (<i>Limosa limosa</i>) [A156]</p> <p>Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</p> <p>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</p> <p>Wetland and Waterbirds [A999]</p>	3.15	<p>Yes, there is a hydrological connection via Incherky river (IE_SH_25I020930) which is a tributary of River Shannon.</p> <p>The Site is within the CFR for whooper swan, golden plover, black-headed gull, black-tailed godwit, and Greenland white-fronted goose. A CFR has not been established for the other SCI, so the maximum of 20km (as per Nature Scot, 2018) has been assumed.</p>
All Saints Bog and Esker SAC	000566	<p>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <p>Active raised bogs [7110]</p> <p>Degraded raised bogs still capable of natural regeneration [7120]</p> <p>Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</p> <p>Bog woodland [91D0]</p>	3.16	<p>Yes. There is a hydrological connection between this SAC and the proposed site via River Rapemills (EU Code: IE_SH_25R010300).</p>
All Saints Bog SPA	004103	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	3.16	<p>Yes. There is a hydrological connection between this SAC and the proposed site via</p>

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
				River Rapemills (EU Code: IE_SH_25R010300). The Site is within the CFR for this SCI, i.e. 5-8km.
River Shannon Callows SAC	000216	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] Limestone pavements [8240] 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] <i>Lutra lutra</i> (Otter) [1355]	6.62	Yes. There is a hydrological connection between this SAC and the proposed site via River Rapemills (EU Code: IE_SH_25R010300).
Middle Shannon Callows SPA	004096	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Corncrake (<i>Crex crex</i>) [A122] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]	6.62	Yes. There is a hydrological connection between this SAC and the proposed site via River Rapemills (EU Code: IE_SH_25R010300). The Site is within the CFR for whooper swan, black-tailed godwit black-headed gull, and golden plover. A CFR has not been established for the other SCI, so the maximum of 20km (as per Nature Scot, 2018) has been assumed.
Ballyduff/Clonfinane Bog SAC	000641	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	7.14	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Lisduff Fen SAC	002147	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	8.24	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Island Fen SAC	002236	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Alkaline fens [7230]	8.54	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Sharavogue Bog SAC	000585	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.22	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Redwood Bog SAC	002353	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.34	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Arragh More (Derrygreen) Bog SAC	002207	Degraded raised bogs still capable of natural regeneration [7120]	10.60	No.
Kilcarren-Firville Bog SAC	000647	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	11.31	No.
Slieve Bloom Mountains SPA	004160	Hen Harrier (<i>Circus cyaneus</i>) [A082]	11.65	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon). The Site is within the CFR Hen Harrier (i.e. 2-10km).
Moyclare Bog SAC	000581	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	12.08	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Slieve Bloom Mountains SAC	000412	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	13.59	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Liskeenan Fen SAC	001683	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]	13.96	No.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Ferbane Bog SAC	000575	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	14.02	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Clonaslee Eskers And Derry Bog SAC	000859	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	15.02	No.
River Suck Callows SPA	004097	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	17.29	Yes. There is a hydrological connection between this SAC and the proposed site via River Rapemills (EU Code: IE_SH_25R010300). The Site is within the CFR for whooper swan, golden plover, and Greenland white-fronted goose. A CFR has not been established for the other SCI, so the maximum of 20km (as per Nature Scot, 2018) has been assumed.
Lough Derg, North-east Shore SAC	002241	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240] 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] <i>Taxus baccata</i> woods of the British Isles [91J0]	17.32	Yes. There is a hydrological connection between this SAC and the proposed site via River Rapemills (EU Code: IE_SH_25R010300) which drains to the River Shannon, which drains to Lough Derg.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Lough Derg (Shannon) SPA	004058	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Tufted Duck (<i>Aythya fuligula</i>) [A061] Goldeneye (<i>Bucephala clangula</i>) [A067] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	17.49	Yes. There is a hydrological connection between this SAC and the proposed site via River Rapemills (EU Code: IE_SH_25R010300) which drains to the River Shannon, which drains to Lough Derg. The Site is within the CFR for cormorant. A CFR has not been established for the other SCI so the maximum of 20km (as per Nature Scot, 2018) has been assumed.
Fin Lough (Offaly) SAC	000576	Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	18.03	There is a potential groundwater connection to this SAC as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Scohaboy (Sopwell) Bog SAC	002206	Degraded raised bogs still capable of natural regeneration [7120]	18.75	No.

Grid Connection Route – Option 1

There are 17 Natura 2000 sites within 20km of Option 1 (Table 3-2). The route does not traverse any Natura 2000 site. However, it is situated within 15m of Dovegrove Callows SPA which is designated for Greenland white-fronted goose. The route is primarily situated along existing roads and some agricultural grassland. This is sub-optimal habitat, and of limited to negligible ecological value to the species.

There is a hydrological connection to Dovegrove Callows SPA, River Little Brosna Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA via Little Brosna river (IE_SH_25L021000). As such, there is potential for habitat-quality impacts on this SPA in the absence of avoidance/mitigation measures.

Grid Connection Route – Option 2

There are 19 Natura 2000 sites within 20km of Option 2 (Table 3-3). The route runs adjacent to Ridge Riad, SW of Rapemills SAC.

This route lies within 58m of Rapemills river (IE_SH_25R010300) which flows westward to All Saints Bog and Esker SAC, River Shannon Callows SAC, Middle Shannon Callows SPA, Lough Derg, North-east Shore SAC, and Lough Derg (Shannon) SPA. As such, there is potential for habitat-quality impacts on this SPA in the absence of avoidance/mitigation measures.

There are six SPAs within 20km of Option 2. However, the habitats along the route are primarily artificial in nature and of no ecological value to these species.

Grid Connection Route – Option 3

There are 19 Natura 2000 sites within 20km of Option 3 (Table 3-4). The route runs through River Shannon Callows SAC, and Middle Shannon Callows SPA.

Option 3 crosses Rapemills river (IE_SH_25R010300) which flows westward to All Saints Bog and Esker SAC, River Suck Callows SPA, All Saints Bog SPA, and River Little Brosna Callows SPA. As such, there is potential for habitat-quality impacts on this SPA in the absence of avoidance/mitigation measures.

There are seven SPAs within 20km of Option 3. However, the habitats along the route are primarily artificial in nature and of no ecological value to these species.

Table 3-2 Natura 2000 sites within 20km – Option 1

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Dovegrove Callows SPA	004137	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	0.15	Yes. There is a hydrological connection to this SPA via Little Brosna river (IE_SH_25L021000).
Ridge Road, SW of Rapemills SAC	000919	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	1.52	No.
River Little Brosna Callows SPA	004086	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	2.84	Yes. There is a hydrological connection to this SPA via Little Brosna river (IE_SH_25L021000).
All Saints Bog and Esker SAC	000566	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	3.34	No.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
		Bog woodland [91D0]		
All Saints Bog SPA	004103	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	3.34	No. Option 2 is outside the core foraging range for this SCI.
Ballyduff/Clonfinane Bog SAC	000641	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	5.81	No.
River Shannon Callows SAC	000216	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] Limestone pavements [8240] 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] <i>Lutra lutra</i> (Otter) [1355]	7.00	Yes. There is a hydrological connection to this SAC via Little Brosna river (IE_SH_25L021000).
Middle Shannon Callows SPA	004096	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Corncrake (<i>Crex crex</i>) [A122] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]	7.00	Yes. There is a hydrological connection to this SPA via Little Brosna river (IE_SH_25L021000).
Lisduff Fen SAC	002147	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	7.69	No.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Sharavogue Bog SAC	000585	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	8.18	No.
Redwood Bog SAC	002353	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.03	No.
Island Fen SAC	002236	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Alkaline fens [7230]	9.13	No.
Arragh More (Derrybreen) Bog SAC	002207	Degraded raised bogs still capable of natural regeneration [7120]	9.39	No.
Kilcarren-Firville Bog SAC	000647	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	10.11	No
Liskeenan Fen SAC	001683	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]	12.63	No.
Moyclare Bog SAC	000581	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	13.65	No.
Slieve Bloom Mountains SPA	004160	Hen Harrier (<i>Circus cyaneus</i>) [A082]	13.74	No. Option 2 is outside the core foraging range for this SCI.

Table 3-3 Natura 2000 sites within 20km – Option 2

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Ridge Road, SW of Rapemills SAC	000919	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	0.00	No, Option 2 adjacent through this SAC, but shall be confined to the existing roadway.
All Saints Bog SPA	004103	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	0.09	No. While Option 2 is within the core foraging range for this SCI, the habitats are artificial in nature and of no ecological value to this species.
All Saints Bog and Esker SAC	000566	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	0.13	Option 2 is within 58m of Rapemills river (IE_SH_25R010300) which flows westward to this SAC.
River Little Brosna Callows SPA	004086	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	0.24	No. While Option 2 is within the core foraging range for these SCI, the habitats are artificial in nature and of no ecological value to these species.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
		Wetland and Waterbirds [A999]		
Dovegrove Callows SPA	004137	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	0.61	No. While Option 2 is within the core foraging range for these SCI, the habitats are artificial in nature and of no ecological value to these species.
River Shannon Callows SAC	000216	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] Limestone pavements [8240] 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] <i>Lutra lutra</i> (Otter) [1355]	4.44	Option 2 is within 58m of Rapemills river (IE_SH_25R010300) which flows westward to this SAC.
Middle Shannon Callows SPA	004096	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Corncrake (<i>Crex crex</i>) [A122] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]	4.44	Option 2 is within 58m of Rapemills river (IE_SH_25R010300) which flows westward to this SPA. While Option 2 is within the core foraging range for these SCI, the habitats are artificial in nature and of no ecological value to these species.
Redwood Bog SAC	002353	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	5.59	No.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Ballyduff/Clonfinane Bog SAC	000641	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	5.78	No.
Arragh More (Derrybreen) Bog SAC	002207	Degraded raised bogs still capable of natural regeneration [7120]	8.34	No.
Lisduff Fen SAC	002147	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	8.79	No.
Kilcarren-Firville Bog SAC	000647	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.00	No.
Sharavogue Bog SAC	000585	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.07	No.
Island Fen SAC	002236	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Alkaline fens [7230]	9.99	No.
Liskeenan Fen SAC	001683	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]	12.36	No.
Moyclare Bog SAC	000581	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	13.65	No.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Lough Derg, North-east Shore SAC	002241	<p>Juniperus communis formations on heaths or calcareous grasslands [5130]</p> <p>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</p> <p>Alkaline fens [7230]</p> <p>Limestone pavements [8240]</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>	13.81	Option 2 is within 58m of Rapemills river (IE_SH_25R010300) which flows westward to this SAC.
Slieve Bloom Mountains SPA	004160	<p>Hen Harrier (<i>Circus cyaneus</i>) [A082]</p>	13.86	Option 2 is outside of the core foraging range for this SCI. Also, the habitats are artificial in nature and of no ecological value to this species.
Lough Derg (Shannon) SPA	004058	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</p> <p>Tufted Duck (<i>Aythya fuligula</i>) [A061]</p> <p>Goldeneye (<i>Bucephala clangula</i>) [A067]</p> <p>Common Tern (<i>Sterna hirundo</i>) [A193]</p> <p>Wetland and Waterbirds [A999]</p>	13.96	<p>Option 2 is within 58m of Rapemills river (IE_SH_25R010300) which flows westward to this SPA.</p> <p>While Option 2 is within the core foraging range for these SCI, the habitats are artificial in nature and of no ecological value to these species.</p>

Table 3-4 Natura 2000 sites within 20km – Option 3

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
River Shannon Callows SAC	000216	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] Limestone pavements [8240] 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] <i>Lutra lutra</i> (Otter) [1355]	0.00	Option 3 runs directly through this SAC.
Middle Shannon Callows SPA	004096	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Corncrake (<i>Crex crex</i>) [A122] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]	0.00	Option 3 runs directly through this SAC. While Option 3 is within the core foraging range for these SCI, the habitats are primarily artificial in nature and of no ecological value to these species. The route also crosses some agricultural grassland, but the land take would be minimal and not of significant value to these species.
Dovegrove Callows SPA	004137	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	0.97	No. While Option 3 is within the core

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
				foraging range for this SCI, the habitats are primarily artificial in nature and of no significant ecological value to these species.
All Saints Bog and Esker SAC	000566	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	1.15	Option 3 crosses Rapemills river (IE_SH_25R010300) which flows westward to this SAC.
River Suck Callows SPA	004097	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	1.45	Option 3 crosses Rapemills river (IE_SH_25R010300) which flows westward to this SPA. While Option 3 is within the core foraging range for these SCI, the habitats are primarily artificial in nature and of no ecological value to these species.

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Ridge Road, SW of Rapemills SAC	000919	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	1.46	No.
All Saints Bog SPA	004103	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	1.53	Option 3 crosses Rapemills river (IE_SH_25R010300) which flows westward to this SPA. While Option 3 is within the core foraging range for this SCI, the habitats are primarily artificial in nature and of no ecological value to this species.
River Little Brosna Callows SPA	004086	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	2.99	Option 3 crosses Rapemills river (IE_SH_25R010300) which flows westward to this SPA. While Option 3 is within the core foraging range for these SCI, the habitats are primarily artificial in nature and of no

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
				ecological value to these species.
Moyclare Bog SAC	000581	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	3.58	No
Fin Lough (Offaly) SAC	000576	Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	5.56	No
Ballyduff/Clonfinane Bog SAC	000641	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	6.63	No
Mongan Bog SPA	004017	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	6.86	No. While Option 3 is within the core foraging range for these SCI, the habitats are primarily artificial in nature and of no ecological value to these species.
Mongan Bog SAC	000580	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	6.87	No
Ferbane Bog SAC	000575	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	7.10	No

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
Redwood Bog SAC	002353	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	7.16	No.
Pilgrim's Road Esker SAC	001776	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	7.40	No.
Lisduff Fen SAC	002147	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	8.80	No.
Sharavogue Bog SAC	000585	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.23	No.
Island Fen SAC	002236	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Alkaline fens [7230]	10.00	No.
Arragh More (Derrybreen) Bog SAC	002207	Degraded raised bogs still capable of natural regeneration [7120]	10.12	No.
Kilcarren-Firville Bog SAC	000647	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	10.84	No.
Liskeenan Fen SAC	001683	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]	13.44	No.
Slieve Bloom Mountains SPA	004160	Hen Harrier (<i>Circus cyaneus</i>) [A082]	13.86	No. Option 3 is outside of the core foraging range for this SCI. Also, the habitats are primarily artificial in

Site	Site Code	Qualifying Interest(s)	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connection (Yes/No)
				nature and of no ecological value to this species.

3.1.2 Nationally Designated Sites

Wind Farm Site

There are 27 nationally designated sites within 20km of the proposed wind farm. The Site is not situated within any designated site.

Woodville Woods pNHA is situated within 35m of the Site. The site synopsis for this site notes mobile species, such as snipe, fallow deer, pine marten, red squirrel and badger. There is suitable habitat for these species within the proposed wind farm site and, thus, a potential ecological link to Woodville Woods pNHA.

There are 13 pNHAs within the same catchment area as the site, namely Ross And Glens Eskers pNHA, Lough Coura pNHA, Ridge Road, SW Of Rapemills pNHA, Dovegrove Callows pNHA, All Saints Bog And Esker pNHA, Ballyduff/Clonfinane Bog pNHA, Cloghanbeg pNHA, Derrykeel Meadows pNHA, Sharavogue Bog pNHA, River Shannon Callows pNHA, Camcor Wood pNHA, Ferbane Bog pNHA, and Slieve Bloom Mountains pNHA. As such, there is potential for a hydrological link between the Site and these pNHAs. Further investigation is required to establish if there is a connection.

There is a direct hydrological connection to River Shannon Callows pNHA via Rapemills river (IE_SH_25R010300) which flows westward to this pNHA. As such, there is potential for water quality impacts on these designated sites in the absence of avoidance/mitigation measures.

There is a lack of hydrological or ecological connection between the proposed site and Grand Canal pNHA, Redwood Bog pNHA, Lough Boora pNHA, Kilcarren-Firville Bog pNHA, Moyclare Bog pNHA, Liskeenan Fen pNHA, Kinnitty (Domestic Dwelling, Occupied) pNHA, and Clonfert Cathedral pNHA.

Nationally designated sites within 20km are presented in Table 3-5.

Table 3-5 Nationally designated sites within 20km - Wind Farm Site

Site	Site Code	Qualifying Interests	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connectivity (Yes/No)
Woodville Woods pNHA	000927	Large stand of woodland comprised of oak, hazel, beech, with bramble, ivy, primrose, bluebell, and dog's mercury. An accreted lake colonised by common reed, common club-rush, water horsetail, bulrush. Snipe, fallow deer, pine marten, red squirrel and badger present.	0.35	There is likely to be an ecological connection with species moving between the pNHA and the Site.
Ross And Glenns Eskers pNHA	000920	Gravel esker ridge grading into a cutaway bog of good peat depth. The esker ridge supports a good example of a substantially undisturbed Hazel scrub and forms an important ecological example of landscape formation. The adjoining cutaway bog and fine birch woodland add habitat diversity to this site.	0.46	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Lough Coura pNHA	000909	A small in-filled lake with very few damp areas found. Purple moor grass, common reed, black bog-rush, great fen sedge, broad-leaved pondweed, mare's-tail, lesser tussock sedge, fly orchid and narrow-leaved marsh orchid have been recorded here.	0.73	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Ridge Road, SW Of Rapemills pNHA	000919	No site synopsis available. However, it overlaps with Ridge Road, SW of Rapemills SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.81	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).

Site	Site Code	Qualifying Interests	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connectivity (Yes/No)
Dovegrove Callows pNHA	000010	No site synopsis available. However, it overlaps with Dovegrove Callows SPA. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.83	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
All Saints Bog And Esker pNHA	000566	No site synopsis available. However, it overlaps with All Saints Bog And Esker SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	3.16	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Birr (Domestic Dwelling No.1, Occupied) pNHA	000569	A nursery roost for the Leisler's Bat (ca. 100 bats).	4.17	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Birr (Domestic Dwelling No.2, Occupied) pNHA	000568	A nursery roost for over 200 Leisler's Bats (ca. 200 bats).	4.28	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Bracken's Dwelling, Near Whiteford pNHA	002058	A nursery roost for the Leisler's Bat (ca. 80 bats).	5.48	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Banagher (Domestic Dwelling, Occupied) pNHA	000567	A summer and possibly winter roost of the Brown Long-eared Bat (ca. 60 bats).	5.84	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).

Site	Site Code	Qualifying Interests	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connectivity (Yes/No)
River Shannon Callows pNHA	000216	No site synopsis available. However, it overlaps with River Shannon Callows SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	6.62	There is a hydrological connection via Rapemills river (IE_SH_25R010300) which flows westward to this pNHA.
Ballyduff/Clonfinane Bog pNHA	000641	No site synopsis available. However, it overlaps with Ballyduff/Clonfinane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	7.14	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Cloghanbeg pNHA	002059	A nursery roost for the Leisler's Bat (ca. 50 bats).	7.93	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Derrykeel Meadows pNHA	000897	The calcium-rich substratum of the meadows gives rise to an interesting ecological habitat. Black Bog-rush, Common Reed, Purple Moor-grass, Purple-loosestrife, Soft Rush, Hard Rush, Selfheal, and Common Butterwort are abundant. Wandering Snail (<i>Lymnaea peregra</i>) also flourishes in this habitat. Blunt flowered Rush (<i>Juncus subnodulosus</i>) is also common in certain areas.	8.16	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Grand Canal pNHA	002104	A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.	8.66	No.

Site	Site Code	Qualifying Interests	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connectivity (Yes/No)
Sharavogue Bog pNHA	000585	No site synopsis available. However, it overlaps Sharavogue Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.22	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Redwood Bog pNHA	000654	No site synopsis available. However, it overlaps Redwood Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.34	No.
Lough Boora pNHA	001365	The drained lake-bed consists of shallow fen peat overlying calcareous shell-marsh. The surface of the western portion has been left undisturbed allowing plant colonisation and regeneration.	9.62	No.
Kinnitty (Domestic Dwelling, Occupied) pNHA	000579	A summer roost for the Leisler's Bat (ca. 100 bats).	10.05	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
River Shannon Callows pNHA	000216	No site synopsis available. However, it overlaps Moyclare Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	10.65	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Kilcarren-Firville Bog pNHA	000647	No site synopsis available. However, it overlaps Kilcarren-Firville Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	11.31	No.

Site	Site Code	Qualifying Interests	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connectivity (Yes/No)
Moyclare Bog pNHA	000581	No site synopsis available. However, it overlaps Moyclare Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	12.08	No.
Camcor Wood pNHA	000889	This is a particularly fine example of woodland in a fairly natural condition, although unfortunately the Glinsk gully has suffered to a serious degree from conifer plantation. The native woodland has an impressive age structure with much regeneration, and an equally impressive ground layer, notably species-rich, with 42 mosses, 12 ferns, 15 grasses, and 90 other higher plant species recorded.	13.59	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Liskeenan Fen pNHA	001683	No site synopsis available. However, it overlaps Liskeenan Fen SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	13.96	No.
Ferbane Bog pNHA	000575	No site synopsis available. However, it overlaps Ferbane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	14.01	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).
Slieve Bloom Mountains pNHA	000412	No site synopsis available. However, it overlaps Slieve Bloom Mountains SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	14.03	There is a potential groundwater connection to this pNHA as it is within the same catchment as the proposed wind farm (i.e. Lower Shannon).

Site	Site Code	Qualifying Interests	Distance from Proposed Project Site (km)	Potential Hydrological or Ecological Connectivity (Yes/No)
Clonfert Cathedral pNHA	000244	A large colony of Brown Long-eared Bats. There may be over 100 bats roosting in the church roof, and they may be present all year round.	14.59	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).

Grid Connection Route – Option 1

There are 33 nationally designated sites within 20km of Option 1 (Table 3-6). The route is not located within any nationally designated site.

There is a direct hydrological connection between the site and Dovegrove Callows pNHA, River Little Brosna Callows NHA, and River Shannon Callows pNHA via Little Brosna river (IE_SH_25L021000). As such, there is a potential for water-quality impacts in the absence of avoidance/mitigation measures.

There is a lack of hydrological or ecological connection between the proposed site and 29 nationally designated sites, namely:

- Ross And Glenns Eskers pNHA, Woodville Woods pNHA
- Ridge Road, SW Of Rapemills pNHA
- Lough Coura pNHA
- Birr (Domestic Dwelling No.1, Occupied) pNHA
- All Saints Bog And Esker pNHA
- Birr (Domestic Dwelling No. 2, Occupied) pNHA
- Killeen Bog NHA
- Bracken's Dwelling, Near Whiteford pNHA
- Ballyduff/Clonfinane Bog pNHA
- Banagher (Domestic Dwelling, Occupied) pNHA
- Cloghanbeg pNHA
- Sharavogue Bog pNHA
- Arragh More Bog NHA
- Redwood Bog pNHA
- Grand Canal pNHA
- Kilcarren-Firville Bog pNHA
- Derrykeel Meadows pNHA
- Kilnaborris Bog NHA
- Lorrha Bog NHA
- Lough Boora pNHA
- Ballymacegan Bog NHA
- Kinnitty (Domestic Dwelling, Occupied) pNHA
- Liskeen Fen pNHA
- Moyclare Bog pNHA
- Cangort Bog NHA
- Lough Nahinch (Tipperary) pNHA
- Fiagh Bog pNHA
- Friar's Lough pNHA
- Meeneen Bog NHA

Nationally designated sites within 20km are presented in

Table 3-5.

Grid Connection Route – Option 2

There are 34 nationally designated sites within 20km of Option 2 (Table 3-7). The route crosses Ross And Glenns Eskers pNHA, and Ridge Road, SW Of Rapemills pNHA. As such, there is potential for a direct impact on these two sites.

Woodville Woods pNHA is situated within 11m of Option 2. The site synopsis for this site notes mobile species, such as snipe, fallow deer, pine marten, red squirrel and badger. There is suitable habitat for these species within the limited semi-natural habitats along the route. Thus, there is a potential ecological link to Woodville Woods pNHA.

There is a lack of hydrological or ecological connection between the proposed site and 29 nationally designated sites, namely:

- All Saints Bog And Esker pNHA
- River Little Brosna Callows NHA
- Dovegrove Callows pNHA
- Lough Coura pNHA
- Birr (Domestic Dwelling No.1, Occupied) pNHA
- River Shannon Callows pNHA
- Birr (Domestic Dwelling No. 2, Occupied) pNHA
- Cloghanbeg pNHA
- Killeen Bog NHA
- Redwood Bog pNHA
- Ballyduff/Clonfinane Bog pNHA
- Bracken's Dwelling, Near Whiteford pNHA
- Banagher (Domestic Dwelling, Occupied) pNHA
- Arragh More Bog NHA
- Kilnaborris Bog NHA
- Lorrha Bog NHA
- Ballymacegan Bog NHA
- Grand Canal pNHA
- Sharavogue Bog pNHA
- Derrykeel Meadows pNHA
- Meeneen Bog NHA
- Friar's Lough pNHA
- Lough Boora pNHA
- Liskeenan Fen pNHA
- Clonfert Cathedral pNHA
- Kinnitty (Domestic Dwelling, Occupied) pNHA
- Moyclare Bog pNHA
- Fiagh Bog pNHA
- Lough Derg pNHA
- Cangort Bog NHA
- Lough Nahinch (Tipperary) pNHA

Grid Connection Route – Option 3

There are 47 nationally designated sites within 20km of Option 3 (Table 3-8). The route crosses River Shannon Callows pNHA, and Grand Canal pNHA. As such, there is potential for a direct impact on these two sites.

Woodville Woods pNHA is situated within 11m of Option 3. The site synopsis for this site notes mobile species, such as snipe, fallow deer, pine marten, red squirrel and badger. There is suitable habitat for these species within the limited semi-natural habitats along the route. Thus, there is a potential ecological link to Woodville Woods pNHA.

There is a hydrological connection between Option 3 and All Saints Bog And Esker pNHA, Suck River Callows NHA, River Little Brosna Callows NHA, Cloghanbeg pNHA, and Killeen Bog NHA via Brosna river (IE_SH_25B091200) and Rapemills river (IE_SH_25R010500). As such, there is potential for impacts on these designated sites in the absence of avoidance/mitigation measures.

There is a lack of hydrological or ecological connection between the proposed site and 29 nationally designated sites, namely:

- All Saints Bog And Esker pNHA
- River Little Brosna Callows NHA
- Dovegrove Callows pNHA
- Lough Coura pNHA
- Birr (Domestic Dwelling No.1, Occupied) pNHA
- River Shannon Callows pNHA
- Birr (Domestic Dwelling No. 2, Occupied) pNHA
- Cloghanbeg pNHA
- Killeen Bog NHA
- Redwood Bog pNHA
- Ballyduff/Clonfinane Bog pNHA
- Bracken's Dwelling, Near Whiteford pNHA
- Banagher (Domestic Dwelling, Occupied) pNHA
- Arragh More Bog NHA
- Kilnaborris Bog NHA
- Lorrha Bog NHA
- Ballymacegan Bog NHA
- Grand Canal pNHA
- Sharavogue Bog pNHA
- Derrykeel Meadows pNHA
- Meeneen Bog NHA
- Friar's Lough pNHA
- Lough Boora pNHA
- Liskeen Fen pNHA
- Clonfert Cathedral pNHA
- Kinnitty (Domestic Dwelling, Occupied) pNHA
- Moyclare Bog pNHA
- Fiagh Bog pNHA
- Lough Derg pNHA
- Cangort Bog NHA
- Lough Nahinch (Tipperary) pNHA

Table 3-6 Nationally Designated Sites within 20km – Option 1

Site	Site Code	Qualifying Interest(s)	Distance from Option 1 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Ross And Glenns Eskers pNHA	000920	Gravel esker ridge grading into a cutaway bog of good peat depth. The esker ridge supports a good example of a substantially undisturbed Hazel scrub and forms an important ecological example of landscape formation. The adjoining cutaway bog and fine birch woodland add habitat diversity to this site.	0.01	No. The route will be restricted to the existing roadway and will not encroach on this pNHA.
Woodville Woods pNHA	000927	Large stand of woodland comprised of oak, hazel, beech, with bramble, ivy, primrose, bluebell, and dog's mercury. An accreted lake colonised by common reed, common club-rush, water horsetail, bulrush. Snipe, fallow deer, pine marten, red squirrel and badger present.	0.10	No. The route will be restricted to the existing roadway and will not encroach on this pNHA.
Dovegrove Callows pNHA	000010	No site synopsis available. However, it overlaps with Dovegrove Callows SPA. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	0.57	Yes. There is a hydrological connection to this pNHA via Little Brosna river (IE_SH_25L021000).
Ridge Road, SW Of Rapemills pNHA	000919	No site synopsis available. However, it overlaps with Ridge Road, SW of Rapemills SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.53	No.
Lough Coura pNHA	000909	A small in-filled lake with very few damp areas found. Purple moor grass, common reed, black bog-rush, great fen sedge, broad-leaved pondweed, mare's-tail, lesser tussock sedge, fly orchid and narrow-leaved marsh orchid have been recorded here.	2.70	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 1 (km)	Potential Hydrological or Ecological Connection (Yes/No)
River Little Brosna Callows NHA	000564	Peatlands [4] Birds [12]	2.84	Yes. There is a hydrological connection to this pNHA via Little Brosna river (IE_SH_25L021000).
Birr (Domestic Dwelling No.1, Occupied) pNHA	000569	A nursery roost for the Leisler's Bat (ca. 100 bats).	3.21	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
All Saints Bog And Esker pNHA	000566	No site synopsis available. However, it overlaps with All Saints Bog And Esker SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	3.34	No.
Birr (Domestic Dwelling No. 2, Occupied) pNHA	000568	A nursery roost for over 200 Leisler's Bats (ca. 200 bats).	3.39	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Killeen Bog NHA	000648	Peatlands [4]	4.37	No.
Bracken's Dwelling, Near Whiteford pNHA	002058	A nursery roost for the Leisler's Bat (ca. 80 bats).	4.96	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Ballyduff/Clonfinane Bog pNHA	000641	No site synopsis available. However, it overlaps with Ballyduff/Clonfinane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	5.81	No.
Banagher (Domestic Dwelling, Occupied) pNHA	000567	A summer and possibly winter roost of the Brown Long-eared Bat (ca. 60 bats).	6.69	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).

Site	Site Code	Qualifying Interest(s)	Distance from Option 1 (km)	Potential Hydrological or Ecological Connection (Yes/No)
River Shannon Callows pNHA	000216	No site synopsis available. However, it overlaps with River Shannon Callows SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	7.00	Yes. There is a hydrological connection to this pNHA via Little Brosna river (IE_SH_25L021000).
Cloghanbeg pNHA	002059	A nursery roost for the Leisler's Bat (ca. 50 bats).	8.15	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Sharavogue Bog pNHA	000585	No site synopsis available. However, it overlaps with Sharavogue Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	8.17	No.
Arragh More Bog NHA	000640	Peatlands [4]	9.00	No.
Redwood Bog pNHA	000654	No site synopsis available. However, it overlaps with Redwood Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.03	No.
Grand Canal pNHA	002104	A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.	9.30	No.
Kilcarren-Firville Bog pNHA	000647	No site synopsis available. However, it overlaps with Kilcarren-Firville Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	10.11	No.
Derrykeel Meadows pNHA	000897	The calcium-rich substratum of the meadows gives rise to an interesting ecological habitat.	10.35	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 1 (km)	Potential Hydrological or Ecological Connection (Yes/No)
		Black Bog-rush, Common Reed, Purple Moor-grass, Purple-loosestrife, Soft Rush, Hard Rush, Selfheal, and Common Butterwort are abundant. Wandering Snail (<i>Lymnaea peregra</i>) also flourishes in this habitat. Blunt flowered Rush (<i>Juncus subnodulosus</i>) is also common in certain areas.		
Kilnaborris Bog NHA	000284	Peatlands [4]	11.19	No.
Lorrha Bog NHA	001684	Peatlands [4]	11.28	No.
Lough Boora pNHA	001365	The drained lake-bed consists of shallow fen peat overlying calcareous shell-marsh. The surface of the western portion has been left undisturbed allowing plant colonisation and regeneration.	12.03	No.
Ballymacegan Bog NHA	000642	Peatlands [4]	12.42	No.
Kinnitty (Domestic Dwelling, Occupied) pNHA	000579	A summer roost for the Leisler's Bat (ca. 100 bats).	12.46	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Liskeenan Fen pNHA	001683	No site synopsis available. However, it overlaps Liskeenan Fen SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	12.63	No.
Moyclare Bog pNHA	000581	No site synopsis available. However, it overlaps Moyclare Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	13.64	No.
Cangort Bog NHA	000890	Peatlands [4]	13.73	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 1 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Lough Nahinch (Tipperary) pNHA	000936	<p>The lake is fringed by sparse Common Club-rush swamp. The lower wet areas of adjacent peat support interesting plant communities, including the peatland species Round-leaved Sundew, Bog Asphodel, and other species such as butterfly-orchid, Early-purple Orchid, Common Twayblade and Slender Sedge. Gorse and Downy Birch are colonising some areas, and Buckthorn is also recorded as profuse. An area of mature planted woodland extends to the north and adds diversity to the site. The site is important for a range of breeding water birds such as Redshank, Snipe and Water Rail, and the bird interest is increased in the winter when migratory species use the site.</p> <p>Water Germander which is restricted to the Shannon, and loughs in East Clare and Tipperary, is another notable occurrence.</p>	14.11	No.
Fiagh Bog pNHA	000932	<p>It is not a bog in the true sense but a calcium-rich fen formed over Lower Limestone. It supports dried out areas of coarse grassland and Gorse scrub, around the wet fen area. The vegetation here is characterised by Black Bog-rush and <i>Campylum stellatum</i>. There is also some Common Reed present. The rare Round-mouthed Whorl Snail (<i>Vertigo geyeri</i>).</p>	14.23	No.
Friar's Lough pNHA	000933	<p>A small lake with adjacent woodland. The lough itself is fringed with dense reed-beds. Scrubby and boggy species such as Bracken and Bilberry occur under the woodland canopy. Alder Buckthorn is also present here.</p>	14.42	No.
Meeneen Bog NHA	000310	Peatlands [4]	14.53	No.

Table 3-7 Nationally Designated Sites within 20km – Option 2

Site	Site Code	Qualifying Interest(s)	Distance from Option 2 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Ross And Glenns Eskers pNHA	000920	Gravel esker ridge grading into a cutaway bog of good peat depth. The esker ridge supports a good example of a substantially undisturbed Hazel scrub and forms an important ecological example of landscape formation. The adjoining cutaway bog and fine birch woodland add habitat diversity to this site.	0.00	Yes. Option 2 crosses this pNHA.
Ridge Road, SW Of Rapemills pNHA	000919	No site synopsis available. However, it overlaps Ridge Road, SW Of Rapemills SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	0.00	Yes. Option 2 crosses this pNHA.
All Saints Bog And Esker pNHA	000566	No site synopsis available. However, it overlaps All Saints Bog And Esker SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	0.09	No.
Woodville Woods pNHA	000927	Large stand of woodland comprised of oak, hazel, beech, with bramble, ivy, primrose, bluebell, and dog's mercury. An accreted lake colonised by common reed, common club-rush, water horsetail, bulrush. Snipe, fallow deer, pine marten, red squirrel and badger present.	0.11	There is likely to be an ecological connection with species moving between the pNHA and the Site.
River Little Brosna Callows NHA	000564	Peatlands [4] Birds [12]	0.24	No.
Dovegrove Callows pNHA	000010	No site synopsis available. However, it overlaps with Dovegrove Callows SPA. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.15	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 2 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Lough Coura pNHA	000909	A small in-filled lake with very few damp areas found. Purple moor grass, common reed, black bog-rush, great fen sedge, broad-leaved pondweed, mare's-tail, lesser tussock sedge, fly orchid and narrow-leaved marsh orchid have been recorded here.	2.70	No.
Birr (Domestic Dwelling No.1, Occupied) pNHA	000569	A nursery roost for the Leisler's Bat (ca. 100 bats).	4.30	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
River Shannon Callows pNHA	000216	No site synopsis available. However, it overlaps with River Shannon Callows SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	4.44	No.
Birr (Domestic Dwelling No. 2, Occupied) pNHA	000568	A nursery roost for over 200 Leisler's Bats (ca. 200 bats).	4.50	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Cloghanbeg pNHA	002059	A nursery roost for the Leisler's Bat (ca. 50 bats).	4.70	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Killeen Bog NHA	000648	Peatlands [4]	4.76	No.
Redwood Bog pNHA	000654	No site synopsis available. However, it overlaps with Redwood Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	5.59	No.
Ballyduff/Clonfinane Bog pNHA	000641	No site synopsis available. However, it overlaps with Ballyduff/Clonfinane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	5.79	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 2 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Bracken's Dwelling, Near Whiteford pNHA	002058	A nursery roost for the Leisler's Bat (ca. 80 bats).	6.06	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Banagher (Domestic Dwelling, Occupied) pNHA	000567	A summer and possibly winter roost of the Brown Long-eared Bat (ca. 60 bats).	6.69	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).
Arragh More Bog NHA	000640	Peatlands [4]	8.13	No.
Kilnaborris Bog NHA	000284	Peatlands [4]	8.27	No.
Lorrha Bog NHA	001684	Peatlands [4]	8.92	No.
Ballymacegan Bog NHA	000642	Peatlands [4]	8.96	No.
Grand Canal pNHA	002104	A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.	9.00	No.
Sharavogue Bog pNHA	000585	No site synopsis available. However, it overlaps with Sharavogue Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.07	No.
Derrykeel Meadows pNHA	000897	The calcium-rich substratum of the meadows gives rise to an interesting ecological habitat. Black Bog-rush, Common Reed, Purple Moor-grass, Purple-loosestrife, Soft Rush, Hard Rush, Selfheal, and Common Butterwort are abundant. Wandering Snail (<i>Lymnaea peregra</i>) also flourishes in this habitat. Blunt flowered Rush (<i>Juncus subnodulosus</i>) is also common in certain areas.	10.36	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 2 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Meeneen Bog NHA	000310	Peatlands [4]	11.07	No.
Friar's Lough pNHA	000933	A small lake with adjacent woodland. The lough itself is fringed with dense reed-beds. Scrubby and boggy species such as Bracken and Bilberry occur under the woodland canopy. Alder Buckthorn is also present here.	11.95	No.
Lough Boora pNHA	001365	The drained lake-bed consists of shallow fen peat overlying calcareous shell-marsh. The surface of the western portion has been left undisturbed allowing plant colonisation and regeneration.	12.03	No.
Liskeenan Fen pNHA	001683	No site synopsis available. However, it overlaps with Liskeenan Fen SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	12.37	No.
Clonfert Cathedral pNHA	000244	A large colony of Brown Long-eared Bats. There may be over 100 bats roosting in the church roof, and they may be present all year round.	12.43	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).
Kinnitty (Domestic Dwelling, Occupied) pNHA	000579	A summer roost for the Leisler's Bat (ca. 100 bats).	12.48	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Moyclare Bog pNHA	000581	No site synopsis available. However, it overlaps with Moyclare Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	13.65	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 2 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Fiagh Bog pNHA	000932	It is not a bog in the true sense but a calcium-rich fen formed over Lower Limestone. It supports dried out areas of coarse grassland and Gorse scrub, around the wet fen area. The vegetation here is characterised by Black Bog-rush and <i>Campylium stellatum</i> . There is also some Common Reed present. The rare Round-mouthed Whorl Snail (<i>Vertigo geyeri</i>).	13.83	No.
Lough Derg pNHA	000011	No site synopsis available. However, it overlaps with Lough Derg, North-east Shore SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	13.92	No.
Cangort Bog NHA	000890	Peatlands [4]	14.17	No.
Lough Nahinch (Tipperary) pNHA	000936	The lake is fringed by sparse Common Club-rush swamp. The lower wet areas of adjacent peat support interesting plant communities, including	14.55	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 2 (km)	Potential Hydrological or Ecological Connection (Yes/No)
		<p>the peatland species Round-leaved Sundew, Bog Asphodel, and other species such as butterfly-orchid, Early-purple Orchid, Common Twayblade and Slender Sedge. Gorse and Downy Birch are colonising some areas, and Buckthorn is also recorded as profuse. An area of mature planted woodland extends to the north and adds diversity to the site. The site is important for a range of breeding water birds such as Redshank, Snipe and Water Rail, and the bird interest is increased in the winter when migratory species use the site. Water Germander which is restricted to the Shannon, and loughs in East Clare and Tipperary, is another notable occurrence.</p>		

Table 3-8 Nationally Designated Sites within 20km – Option 3

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
River Shannon Callows pNHA	000216	No site synopsis available. However, it overlaps with River Shannon Callows SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	0.00	Yes. There is a hydrological connection to this pNHA via Brosna river (IE_SH_25B091200) and Rapemills river (IE_SH_25R010500).
Grand Canal pNHA	002104	A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.	0.00	Yes. Option 3 traverses this pNHA.
Ross And Glenns Eskers pNHA	000920	Gravel esker ridge grading into a cutaway bog of good peat depth. The esker ridge supports a good example of a substantially undisturbed Hazel scrub and forms an important ecological example of landscape formation. The adjoining cutaway bog and fine birch woodland add habitat diversity to this site.	0.01	No.
Woodville Woods pNHA	000927	Large stand of woodland comprised of oak, hazel, beech, with bramble, ivy, primrose, bluebell, and dog's mercury. An accreted lake colonised by common reed, common club-rush, water horsetail, bulrush. Snipe, fallow deer, pine marten, red squirrel and badger present.	0.11	There is likely to be an ecological connection with species moving between the pNHA and the Site.

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
All Saints Bog And Esker pNHA	000566	No site synopsis available. However, it overlaps with All Saints Bog And Esker SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.15	Yes. There is a hydrological connection to this pNHA via Rapemills river (IE_SH_25R010500).
Suck River Callows NHA	000222	Peatlands [4] Birds [12]	1.45	Yes. There is a hydrological connection to this pNHA via Brosna river (IE_SH_25B091200) and Rapemills river (IE_SH_25R010500).
Ridge Road, SW Of Rapemills pNHA	000919	No site synopsis available. However, it overlaps with Ridge Road, SW Of Rapemills SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.47	No.
Dovegrove Callows pNHA	000010	No site synopsis available. However, it overlaps with Dovegrove Callows SPA. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.52	No.
Banagher (Domestic Dwelling, Occupied) pNHA	000567	A summer and possibly winter roost of the Brown Long-eared Bat (ca. 60 bats).	1.94	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).
Lough Coura pNHA	000909	A small in-filled lake with very few damp areas found. Purple moor grass, common reed, black bog-rush, great fen sedge, broad-leaved pondweed, mare's-tail, lesser tussock sedge, fly orchid and narrow-leaved marsh orchid have been recorded here.	2.69	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
River Little Brosna Callows NHA	000564	Peatlands [4] Birds [12]	2.99	Yes. There is a hydrological connection to this pNHA via Rapemills river (IE_SH_25R010500).
Clorhane Wood pNHA	000894	No site synopsis available. However, it overlaps with River Shannon Callows SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	3.05	No.
Moyclare Bog pNHA	000581	No site synopsis available. However, it overlaps with Moyclare Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	3.54	No.
Clonfert Cathedral pNHA	000244	A large colony of Brown Long-eared Bats. There may be over 100 bats roosting in the church roof, and they may be present all year round.	3.54	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3.45km (Bat Conservation Trust, 2016)).
Lough Nanag Esker pNHA	000910	An esker ridge composed of glacial gravels. A small lake occurs in the south-eastern section of the site. Support small populations of the rare and legally protected green-winged Orchid (<i>Orchis morio</i>).	4.12	No.
Birr (Domestic Dwelling No.1, Occupied) pNHA	000569	A nursery roost for the Leisler's Bat (ca. 100 bats).	4.30	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Birr (Domestic Dwelling No. 2, Occupied) pNHA	000568	A nursery roost for the Leisler's Bat (ca. 200 bats).	4.50	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Cloghanbeg pNHA	002059	A nursery roost for the Leisler's Bat (ca. 50 bats).	5.00	Yes. There is a hydrological connection to this pNHA via Rapemills river (IE_SH_25R010500).
Killeen Bog NHA	000648	Peatlands [4]	5.24	Yes. There is a hydrological connection to this pNHA via Rapemills river (IE_SH_25R010500).
Kilnaborris Bog NHA	000284	Peatlands [4]	5.47	No.
Fin Lough (Offaly) pNHA	000576	No site synopsis available. However, it overlaps with Fin Lough (Offaly) SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	5.55	No.
Bracken's Dwelling, Near Whiteford pNHA	002058	A nursery roost for the Leisler's Bat (ca. 80 bats).	6.06	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Mongan Bog pNHA	000580	No site synopsis available. However, it overlaps with Mongan Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	6.35	No.
Ballyduff/Clonfinane Bog pNHA	000641	No site synopsis available. However, it overlaps with Ballyduff/Clonfinane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	6.63	No.
Ferbane Bog pNHA	000575	No site synopsis available. However, it overlaps with Ferbane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	6.87	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Clonfinlough Esker pNHA	000892	Well drained, calcium rich soils of eskers often support interesting and species-rich vegetation. The mosaic of scrub and grassland is attractive to common birds and mammals.	7.08	No.
Pilgrim's Road Esker pNHA	001776	No site synopsis available. However, it overlaps with Pilgrim's Road Esker SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	7.13	No.
Redwood Bog pNHA	000654	No site synopsis available. However, it overlaps with Redwood Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	7.16	No.
Cloonascragh Fen And Black Wood pNHA	001247	The fen is one of the main sites for the very scarce and declining snail. Woodland on eskers is a rare and fragmented habitat in Ireland. There has probably always been woodland at Black Wood. Although coppicing has occurred, the ground flora is extremely diverse and intact. In this situation it gives rare clues as to the character of the original post-glacial woodland development. The transition to peat gives the wood extra interest.	7.40	No.
Sharavogue Bog pNHA	000585	No site synopsis available. However, it overlaps with Sharavogue Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.22	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Arragh More Bog NHA	000640	Peatlands [4]	9.75	No.
Cranberry Lough pNHA	001630	A very natural, undisturbed location and is quite attractive to wildlife in the area. Nesting bird species recorded include Sedge Warbler, Reed Bunting, Snipe, Curlew, Little Grebe and Moorhen. Whooper Swans have also been observed here in the winter	10.17	No.
Derrykeel Meadows pNHA	000897	The calcium-rich substratum of the meadows gives rise to an interesting ecological habitat. Black Bog-rush, Common Reed, Purple Moor-grass, Purple-loosestrife, Soft Rush, Hard Rush, Selfheal, and Common Butterwort are abundant. Wandering Snail (<i>Lymnaea peregra</i>) also flourishes in this habitat. Blunt flowered Rush (<i>Juncus subnodulosus</i>) is also common in certain areas.	10.36	No.
Ballymacegan Bog NHA	000642	Peatlands [4]	10.41	No.
Kilcarren-Firville Bog pNHA	000647	No site synopsis available. However, it overlaps with Kilcarren-Firville Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	10.84	No.
Lough Boora pNHA	001365	The drained lake-bed consists of shallow fen peat overlying calcareous shell-marsh. The surface of the western portion has been left undisturbed allowing plant colonisation and regeneration.	10.88	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Doon Esker Wood pNHA	001830	A long narrow strip of semi-natural woodland along the crest of a steep-sided esker. The ground flora contains many features of the original ancient woodland. This ridge gains even more importance because it is part of the 'Eiscir Riada', the ancient routeway across Ireland to Clonmacnoise and beyond.	11.10	No.
Ballinasloe Esker pNHA	001779	The main habitats are mixed wood and dry broadleaved semi-natural woodland. A freshwater marsh, wet woodland and a small fen also occur on this site.	11.12	No.
Lorrha Bog NHA	001684	Peatlands [4]	11.59	No.
Carrickynaghtan Bog NHA	001623	Peatlands [4]	12.29	
Kinnitty (Domestic Dwelling, Occupied) pNHA	000579	A summer roost for the Leisler's Bat (ca. 100 bats).	12.48	No. This is outside the core sustenance zone (CSZ) for this species (i.e. 3km (Bat Conservation Trust, 2016)).
Meeneen Bog NHA	000310	Peatlands [4]	12.52	No.
Moorfield Bog NHA	000221	Peatlands [4]	13.21	No.
Liskeenan Fen pNHA	001683	No site synopsis available. However, it overlaps with Liskeenan Fen SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	13.44	No.
Clonydonnin Bog NHA	000565	Peatlands [4]	13.94	No.
Cangort Bog NHA	000890	Peatlands [4]	14.42	No.

Site	Site Code	Qualifying Interest(s)	Distance from Option 3 (km)	Potential Hydrological or Ecological Connection (Yes/No)
Friar's Lough pNHA	000933	A small lake with adjacent woodland. The lough itself is fringed with dense reed-beds. Scrubby and boggy species such as Bracken and Bilberry occur under the woodland canopy. Alder Buckthorn is also present here.	14.52	No.

3.2 Habitats

Wind Farm Site

Based on a review of aerial imagery, the Site is predominantly comprised of agricultural grassland, and conifer plantation. The agricultural fields are delineated by hedgerows and treelines throughout. A second-order watercourse (Rapemills river) runs through the north and south of the site, and flows west where it drains to the River Shannon (IE_SH_25S012060). Artificial habitats are also present with a road (N62) and access tracks throughout the site.

The Site is within the distribution of eight Annex I habitats, namely:

- Active raised bog (EU Code: 7110)
- Degraded raised bogs still capable of regeneration (EU Code: 7120)
- Transition mires and quaking bogs (EU Code: 7140)
- Depressions on peat substrates of the Rhynchosporion (EU Code 7150)
- Petrifying springs with tufa formation (Cratoneurion) (EU Code: 7220)
- Alkaline fens (EU Code: 7230)
- Alluvial forests with *Alun glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion*) (EU Code: 91E0)
- Bog woodland (EU Code: 91DO)

As such, there is potential for Annex I habitats to be present within the Site.

Grid Connection Route – Option 1

Option 1 crosses through agricultural grassland, conifer plantation, and hedgerows where it begins within the proposed wind farm site. Following this, it is confined to the existing road which is artificial in nature.

Based on a review of satellite imagery, the route crosses Little Brosna river (IE_SH_25L021000) at two points. This river flows west before draining to the River Shannon.

Grid Connection Route – Option 2

Option 2 crosses through agricultural grassland, conifer plantation, and hedgerows where it begins within the proposed wind farm site. Following this, it is confined to the existing road which is artificial in nature.

Based on a review of satellite imagery, this route option does not traverse any watercourses. However, the eastern end lies within 58m of Rapemills river, which drains to River Shannon.

Grid Connection Route – Option 3

Option 3 crosses through agricultural grassland, conifer plantation, and hedgerows where it begins within the proposed wind farm site. Following this, it is confined to the existing road which is artificial in nature.

Based on a review of satellite imagery, this route crosses ten watercourses, all of which drain to River Shannon.

3.3 Species

3.3.1 Plants

Wind Farm Site

Records of seven species of rare and/or protected flora were yielded from the data search. As such, there is potential for these species to be present within the wind farm site. The results of this data search are presented below in Table 3-9.

Table 3-9 Records of rare and/or protected plant species (NPWS, 2022)

Species		Date of Most Recent Record	Status/Designation	Grid Square
Autumn Lady's-tresses	<i>Spiranthes spiralis</i>	2008	Near threatened	N00
Fly Orchid	<i>Ophrys insectifera</i>	2008	Near threatened	N01
Green-winged Orchid	<i>Orchis morio</i>	2021	Vulnerable and Near Threatened	N00, N01
Lustrous Bog-moss	<i>Sphagnum subnitens</i>	2005	Least Concern. Protected by Habitats Directive [92/42/EEC] Annex V	N00
Magellanic Bog-moss	<i>Sphagnum magellanicum</i>	2005	Genus is protected under Habitats Directive [92/42/EEC] Annex V	N00
Red Hemp-nettle	<i>Galeopsis angustifolia</i>	2007	Endangered.	N01
Meadow Barley	<i>Hordeum secalinum</i>	1998	Vulnerable. Flora (Protection) Order, 2015	N01

Grid Connection Route Options

The grid connection routes proposed are primarily confined to existing roads which are artificial in nature. There is some semi-natural habitat present at the beginning of these routes, but this overlaps with the wind farm boundary which is discussed above. As such, no other protected/rare plant species are envisaged as being present along the route options.

3.3.2 Invertebrates

Wind Farm Site

Records of four protected invertebrate species were yielded from the data search. As such, there may be potential for these species to be present within the proposed site. These are presented below in Table 3-10.

Table 3-10 Records of rare and/or protected invertebrate species (NPWS, 2022; NBDC, 2022)

Species		Date of Record	Designation	Grid Square
Desmoulin's Whorl Snail	Vertigo moulinsiana	2005	Habitats Directive [92/42/EEC] Annex II	N00
Geyer's Whorl Snail	Vertigo geyeri	2005	Habitats Directive [92/42/EEC] Annex II	N00
White-clawed Crayfish	Austropotamobius pallipes	2008	Habitats Directive (92/43/EEC), Annex II, Annex V. Wildlife Act (1976), as amended.	N0164709141 Little Brosna river Blackwater (Shannon Bridge)
Marsh Fritillary	Eurodryas aurinia	2010	Habitats Directive [92/42/EEC] Annex II	N01
Brook Lamprey	Lampetra planeri	1988	Habitats Directive [92/42/EEC] Annex II Fisheries Acts 1959 to 2006	N00 Little Brosna / Riverstown Bridge

Grid Connection Route Option 1

The grid connection routes proposed are primarily confined to existing roads which are artificial in nature. There is some semi-natural habitat present at the beginning of these routes, but this overlaps with the wind farm boundary which is discussed above.

Option 1 has two watercrossings. As outlined in Table 3-10, records of two protected aquatic invertebrate species (i.e. white-clawed crayfish, and brook lamprey) have been recorded. As such, there is potential for impact on these and other protected aquatic species.

Grid Connection Route Option 2

The grid connection routes proposed are primarily confined to existing roads which are artificial in nature. There is some semi-natural habitat present at the beginning of these routes, but this overlaps with the wind farm boundary which is discussed above. As such, no other protected/rare invertebrate species are envisaged as being present along the route option.

Grid Connection Route Option 3

The grid connection routes proposed are primarily confined to existing roads which are artificial in nature. There is some semi-natural habitat present at the beginning of these routes, but this overlaps with the wind farm boundary which is discussed above. Option 3 has ten watercrossings. As outlined in Table 3-10, records of two protected aquatic invertebrate species (i.e. white-clawed crayfish, and

brook lamprey) have been recorded. As such, there is potential for impact on these and other protected aquatic species.

3.3.3 Amphibians

Wind Farm Site

Records of two protected species of amphibian were yielded from the data search, namely smooth newt and common frog. As such, they are likely to be present within the site. These are presented in Table 3-11 below.

Table 3-11 Records of Protected Amphibian species (NPWS, 2022)

Species		Date of Most Recent Record	Designation	Grid Square
Smooth Newt	<i>Lissotriton vulgaris</i>	2011	Wildlife Act, 1976 (as amended)	N01
Common Frog	<i>Rana temporaria</i>	2011	Wildlife Act, 1976 (as amended)	N00, N01

Grid Connection Route Options

The grid connection routes proposed are primarily confined to existing roads which are artificial in nature. There is some semi-natural habitat present at the beginning of these routes, but this overlaps with the wind farm boundary which is discussed above. As such, no other protected/rare amphibian species are envisaged as being present along the route options.

3.3.4 Reptiles

No records of common lizard *Zootoca vivipara* were yielded from the data search. However, there may be suitable habitats present within the wind farm site which would support common lizard.

3.3.5 Birds

Records of protected bird species yielded from the data search are presented in Table 3-12.

The species presented are those which are amber or red listed, those known to be susceptible to collision, and/or Annex I species.

Table 3-12 Records of Bird species (NBDC, 2022)

Species		Date of Record	Designation	Conservation Status	Recorded on-site
Barn Owl	<i>Tyto alba</i>	08/11/2019	Wildlife Act, 1976 (as amended)	Red Listed	None recorded as no species-specific survey undertaken to-date. However, suitable structures will be noted during the winter roost bat survey.
Black-headed Gull	<i>Larus ridibundus</i>	02/02/2015	Wildlife Act, 1976 (as amended) Annex II of EU Birds Directive	Amber Listed	Recorded on site.
Common Kestrel	<i>Falco tinnunculus</i>	07/06/2020	Wildlife Act, 1976 (as amended)	Amber Listed	Recorded on site.
Common Kingfisher	<i>Alcedo atthis</i>	24/05/2020	Wildlife Act, 1976 (as amended) Annex I Birds Directive	Amber Listed	None recorded to-date. However, there are watercourses on site. As such, there is potential for this species to be present.
Common Snipe	<i>Gallinago gallinago</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Red Listed	Yes. There is also suitable habitat on site.
Eurasian Curlew	<i>Numenius arquata</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Red Listed	None recorded to-date. However, there is suitable habitat on site. As such, there is potential for this species to be present.

Species		Date of Record	Designation	Conservation Status	Recorded on-site
Eurasian Teal	<i>Anas crecca</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Amber Listed	None recorded to-date. However, there are watercourses on site. As such, there is potential for this species to be present.
Eurasian Wigeon	<i>Anas penelope</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Amber Listed	None recorded to-date. However, River Little Brosna Callows SPA lies within 24m of the site, and is designated for wigeon. As such, there is potential for this species to forage in or fly through the Site.
European Golden Plover	<i>Pluvialis apricaria</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex I Birds Directive	Red Listed	Recorded to-date. There are also SPAs designated for this species within their core foraging range.
Greater White-fronted Goose	<i>Anser albifrons</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex I Birds Directive	Amber Listed	None recorded to-date. However, there are SPAs designated for this species within their core foraging range (closest is 9m). As such, they may forage or fly through the site.
Little Egret	<i>Egretta garzetta</i>	10/03/2020	Wildlife Act, 1976 (as amended) Annex I of EU Birds Directive	Green Listed	None recorded to-date. However, there is suitable foraging habitat on site, and potential for them to be foraging in or flying through the site.

Species		Date of Record	Designation	Conservation Status	Recorded on-site
Mallard	<i>Anas platyrhynchos</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Green Listed	Recorded on-site.
Mute Swan	<i>Cygnus olor</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Amber Listed	None recorded to-date. However, there is suitable habitat within and around the site. As such, there is potential for this species to be foraging in or flying over the site.
Northern Lapwing	<i>Vanellus vanellus</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Red Listed	Recorded on site.
Peregrine Falcon	<i>Falco peregrinus</i>	26/02/2019	Wildlife Act, 1976 (as amended) Annex I of EU Birds Directive	Green Listed	Recorded on site.
Short-eared Owl	<i>Asio flammeus</i>	03/05/2016	Wildlife Act, 1976 (as amended) Annex II Birds Directive	Amber Listed	None recorded to-date. However, there is suitable habitat on site. As such, there is potential for this species to be present.
Whooper Swan	<i>Cygnus cygnus</i>	27/12/2019	Wildlife Act, 1976 (as amended) Annex I of EU Birds Directive	Amber Listed	Recorded on site.

Key observations during bird surveys on-site to-date include the following:

- Winter 2020/21:
 - 3 flights of whooper swan (20 birds overall)
 - 1 lapwing flight (13 birds)
 - 1 hen harrier flight
 - Kestrel also recorded a handful of times
- Breeding season 2021:
 - handful of black-headed gull observations, 2 lapwing adults and 2 chicks c. 250 m from proposed turbine location to SE, one K. and one L. flight line
- Winter 2021/22:
 - A handful of hen harrier observations
 - Small numbers of Kestrel flight lines each month
 - Lapwing flight lines
 - Black-headed gull flight lines
 - Very large golden plover flock (>2000 birds). Appears to be a one-off passing through area.
 - Male merlin
 - Peregrine falcon flight lines
 - Two whooper swan flight lines

No swans or geese have been recorded feeding or roosting within 2 km of site. No Greenland white-fronted geese ever recorded in any survey. However, the proximity of SPAs designated for these species groups mean there is potential for them to be passing through the site.

3.3.6 Bats

Eight records of bats were yielded from the data search. There is ample suitable roosting, commuting and foraging habitat within the proposed wind farm site. As such, bats are likely to be using the site. Bat species are protected under Wildlife Act, 1976 (as amended), and Annex IV of the Habitats Directive. It is an offence to intentionally disturb, injure or kill a bat or disturb its resting place and any work on a roost must be carried out with the advice of NPWS.

Species		Date of Record	Designation
Brown long-eared bat	<i>Plecotus auritus</i>	26/08/2010	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive

Species		Date of Record	Designation
Daubenton's bat	<i>Myotis daubentonii</i>	25/08/2014	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive
Lesser Noctule	<i>Nyctalus leisleri</i>	06/08/2014	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	21/07/2009	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive
Pipistrelle species	<i>Pipistrellus pipistrellus sensu lato</i>	06/08/2014	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	25/07/2012	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive
Natterer's bat	<i>Myotis nattereri</i>	26/08/2010	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive
Whiskered bat	<i>Myotis mystacinus</i>	18/06/2008	Wildlife Act, 1976 (as amended) Annex IV of the Habitats Directive

The bat landscape suitability (Lundy et al., 2011) index spans from 0 to 100, with 0 indicating landscapes considered least favourable for bats and 100 indicating landscapes considered most favourable for bats, in terms of habitats present.

The suitability index for the proposed project site is presented below (Table 3-13 to Table 3-15) for all bat species, as well as individual species. Overall, the proposed project site is of high suitability for bat species. This is primarily based on the abundance of hedgerows and treelines, and connectivity to the wider landscape.

Table 3-13 Bat Habitat Suitability Index – South-west

Common Name	Scientific Name	Suitability Index
Whiskered bat	<i>Myotis mystacinus</i>	60
Natterer's bat	<i>Myotis nattereri</i>	53
Brown long-eared	<i>Plecotus auritus</i>	51

Common Name	Scientific Name	Suitability Index
Common pipistrelle	Pipistrellus pipistrellus	50
Leisler's bat	Nyctalus leisleri	49
Soprano pipistrelle	Pipistrellus pygmaeus	46
	All Bats	39.22
Daubenton's bat	Myotis daubentonii	38
Lesser horseshoe bat	Rhinolophus hipposideros	3
Nathusius' pipistrelle	Pipistrellus nathusii	3

Table 3-14

Common Name	Scientific Name	Suitability Index
Common pipistrelle	Pipistrellus pipistrellus	44
Brown long-eared	Plecotus auritus	43
Natterer's bat	Myotis nattereri	43
Leisler's bat	Nyctalus leisleri	42
Soprano pipistrelle	Pipistrellus pygmaeus	40
Whiskered bat	Myotis mystacinus	37
Daubenton's bat	Myotis daubentonii	33
	All Bats	31.67
Lesser horseshoe bat	Rhinolophus hipposideros	2
Nathusius' pipistrelle	Pipistrellus nathusii	1

Table 3-15 Bat Habitat Suitability Index – Rest of Site

Common Name	Scientific Name	Suitability Index
Common pipistrelle	Pipistrellus pipistrellus	39
Soprano pipistrelle	Pipistrellus pygmaeus	36
Brown long-eared	Plecotus auritus	36
Leisler's bat	Nyctalus leisleri	36
Natterer's bat	Myotis nattereri	35
Whiskered bat	Myotis mystacinus	29
	All Bats	26.56
Daubenton's bat	Myotis daubentonii	26
Lesser horseshoe bat	Rhinolophus hipposideros	1

Common Name	Scientific Name	Suitability Index
Nathusius' pipistrelle	Pipistrellus nathusii	1

3.3.7 Mammals (other than bats)

Records of nine protected mammal species were yielded from the data search. These are presented in Table 3-16 below.

Table 3-16 Records of Mammal species (NPWS, NBDC, 2022)

Species		Date of Record	Designation	Grid Square	Potential on-site?
Eurasian Badger	<i>Meles meles</i>	2018	Wildlife Act, 1976 (as amended)	M92 N02 N00 N01	Yes, there is suitable habitat for this species on-site.
Eurasian Otter	<i>Lutra lutra</i>	2013	Wildlife Act, 1976 (as amended) Annex II of the Habitats Directive	M92 N02 N01 N00	Yes, there is suitable habitat for this species on-site, including watercourses and connectivity to SACs which are designated for otter.
Eurasian Pygmy Shrew	<i>Sorex minutus</i>	2013	Wildlife Act, 1976 (as amended)	N00	Yes, there is suitable habitat for this species on-site.
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>	2018	Wildlife Act, 1976 (as amended)	M92 N00	Yes, there is suitable habitat for this species on-site.
Fallow Deer	<i>Dama dama</i>	2006	Wildlife Act, 1976 (as amended)	N01 N00	Yes, there is suitable habitat for this species on-site.
Irish Hare	<i>Lepus timidus subsp. hibernicus</i>	2010	Wildlife Act, 1976 (as amended)	M92 N02 N01 N00	Yes, there is suitable habitat for this species on-site.

Species		Date of Record	Designation	Grid Square	Potential on-site?
Irish Stoat	<i>Mustela erminea subsp. hibernica</i>	2005	Wildlife Act, 1976 (as amended)	N01 N00	Yes, there is suitable habitat for this species on-site.
Pine Marten	<i>Martes martes</i>	2021	Wildlife Act, 1976 (as amended)	M92 N01 N00	Yes, there is suitable habitat for this species on-site.
West European Hedgehog	<i>Erinaceus europaeus</i>	1988	Wildlife Act, 1976 (as amended)	M92 N02 N01 N00	Yes, there is suitable habitat for this species on-site.

3.3.8 Invasive Species

Records of 34 invasive species were yielded from the data search.

Records of 19 medium-impact invasive species, and 14 high-impact species was yielded from the data search. The invasiveness of one species (Spanish bluebell) has not yet been established.

Ten Third-Schedule: Part 1 plant species, and four Third-Schedule: Part 2a species was yielded.

Table 3-17 Records of Invasive species (NBDC, 2022)

Species		Date of Record	Invasiveness	Grid Square
American Mink	<i>Mustela vison</i>	08/10/2018	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
American Skunk-cabbage	<i>Lysichiton americanus</i>	28/03/2019	Medium Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Bank Vole	<i>Myodes glareolus</i>	23/06/2013	Medium Impact Invasive Species	N00, N01
Black Currant	<i>Ribes nigrum</i>	08/09/2003	Medium Impact Invasive Species	N00, N01
Brown Rat	<i>Rattus norvegicus</i>	31/12/1981	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Budapest Slug	<i>Tandonia budapestensis</i>	29/10/1997	Medium Impact Invasive Species	N00, N01
Butterfly-bush	<i>Buddleja davidii</i>	13/04/2018	Medium Impact Invasive Species	N00, N01
Cherry Laurel	<i>Prunus laurocerasus</i>	28/01/2021	High Impact Invasive Species	N00, N01

Species		Date of Record	Invasiveness	Grid Square
Common Garden Snail	<i>Cornu aspersum</i>	28/10/1978	Medium Impact Invasive Species	N00, N01
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	31/12/1982	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
European Rabbit	<i>Oryctolagus cuniculus</i>	18/04/2018	Medium Impact Invasive Species	N00, N01
Evergreen Oak	<i>Quercus ilex</i>	11/02/2021	Medium Impact Invasive Species	N00, N01
Fallow Deer	<i>Dama dama</i>	11/07/2018	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
False-acacia	<i>Robinia pseudoacacia</i>	13/08/2009	Medium Impact Invasive Species	N00, N01
Fringed Water-lily	<i>Nymphaeodes peltata</i>	31/12/2010	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Giant Hogweed	<i>Heracleum mantegazzianum</i>	29/05/2003	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Giant Knotweed	<i>Fallopia sachalinensis</i>	26/07/2018	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Giant-rhubarb	<i>Gunnera tinctoria</i>	23/04/2020	High Impact Invasive Species	N00, N01

Species		Date of Record	Invasiveness	Grid Square
			Restricted under Regulation S.I. 477 (Ireland)	
Greater White-toothed Shrew	<i>Crocidura russula</i>	09/04/2020	Medium Impact Invasive Species	N00, N01
Himalayan Honeysuckle	<i>Leycesteria formosa</i>	06/07/2018	Medium Impact Invasive Species	N00, N01
Himalayan Balsam	<i>Impatiens glandulifera</i>	27/07/2019	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Japanese Knotweed	<i>Fallopia japonica</i>	06/07/2018	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>	17/08/2017	Medium Impact Invasive Species	N00, N01
Keeled Slug	<i>Tandonia sowerbyi</i>	30/11/1934	Medium Impact Invasive Species	N00, N01
Pampas-grass	<i>Cortaderia selloana</i>	05/01/2019	Medium Impact Invasive Species	N00, N01
Parrot's-feather	<i>Myriophyllum aquaticum</i>	15/08/2018	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Pitcherplant	<i>Sarracenia purpurea</i>	30/04/1984	Medium Impact Invasive Species	N00, N01
<i>Rhododendron ponticum</i>	<i>Rhododendron ponticum</i>	28/08/2003	High Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01

Species		Date of Record	Invasiveness	Grid Square
Spanish Bluebell	<i>Hyacinthoides hispanica</i>	23/05/2013	Invasiveness not established Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Sycamore	<i>Acer pseudoplatanus</i>	11/02/2021	Medium Impact Invasive Species	N00, N01
Three-cornered Garlic	<i>Allium triquetrum</i>	04/04/2021	Medium Impact Invasive Species Restricted under Regulation S.I. 477 (Ireland)	N00, N01
Traveller's-joy	<i>Clematis vitalba</i>	18/04/2018	Medium Impact Invasive Species	N00, N01
Wrinkled Snail	<i>Candidula intersecta</i>	31/12/1999	Medium Impact Invasive Species	N00, N01

3.4 Summary of Important Ecological Features and Next Steps

3.4.1 Designated Sites

Wind Farm Site

The proposed wind farm site is connected to Natura 2000 sites and nationally designated sites. As such, an assessment must be made of the potential for significant impacts to these sites and their qualifying interests. This may necessitate surveys for the qualifying interest features on and around the proposed site.

Grid Connection Route Options

Of the three grid connection route options, Option 1 and Option 3 present the most connectivity to designated sites, while Option 2 presents the least risks as, based on satellite imagery, it lacks hydrological connectivity, does not traverse protected habitats, and does not encroach on any designated sites.

3.4.2 Habitats

Wind Farm Site

There is potential for Annex I habitats to be present within the proposed wind farm site. It is strongly recommended that habitat surveys be carried out to classify habitats and determine if they are Annex I habitats.

Grid Connection Route Options

Due to the artificial nature of the habitats along the grid connection route, it is not envisaged that any of the three options are likely to encroach on Annex I habitats.

Options 1 and Option 3 traverse watercourses. As such, water-quality impacts and impacts to aquatic fauna may occur as a result of the installation of the grid connections here.

3.4.3 Plants

The data search yielded records of protected and rare flora. The habitat survey (April- September) will identify if there are any rare or protected flora present, or determine the need for further surveys for scarce/ rare plants, or important plant communities within the wind farm site and along the grid connection route.

3.4.4 Invertebrates

The extended habitat survey will help inform if there is potential for the aforementioned protected invertebrate species to be present. Both Marsh Fritillary, Desmoulins's Snail, and Geyer's Whorl Snail are dependent on particular habitat types. As such, if these habitats are absent, it is unlikely these species would be present.

There are records of white-clawed crayfish, and brook lamprey downstream of the site. As such, there is potential for impacts on these and other protected aquatic invertebrate species. An aquatic survey should be carried out to provide detailed information at survey points within the catchment area to establish the protected species and habitats that may be present. Without such detail, the EIAR believe would be deficient. This is now a standardised approach that has been developed and carried out in wind farm developments nationally. A general walkover survey would not provide the level of detail required (i.e. no electro-fishing, crayfish, macrophyte surveys etc.) to inform the presence or absence of protected habitats and species. It is important to consider the downstream catchment that could

be impacted by the project. This would include source populations contributing to downstream designated sites.

3.4.5 Amphibians

Any works should consider the potential for smooth newt and common frog to be present. A survey and appropriate avoidance/mitigation measures to avoid negative impacts on these species will need to be included.

3.4.6 Reptiles

The extended habitat survey will identify if there are potential suitable habitats present to support common lizard.

3.4.7 Birds

An ornithology chapter will be prepared to present the baseline conditions at the proposed Site, as established during bird surveys to-date. This information will contribute to the Biodiversity chapter of the EIAR to determine potential impacts on the species, and to inform suitable avoidance/mitigation measures.

Collision-risk modelling will be completed to inform the collision-risk of the project design, and to inform required changes if necessary.

Lapwing are a key constraint. As such, a pre-construction survey will be required to make sure nest locations have not changed, and to determine an appropriate buffer.

3.4.8 Bats

A full suite of bat surveys will be carried out in 2022 to determine the Site's suitability for roosting bats, the species present, the potential impacts, and necessary avoidance/mitigation measures required.

The results of these surveys will be presented in a bat report which will outline the baseline conditions at the proposed Site. This information will contribute to the Biodiversity chapter of the EIAR to determine potential impacts on the species, and to inform suitable avoidance/mitigation measures.

3.4.9 Mammals

The extended habitat survey will inform the presence and/or potential for protected mammal species within the Site.

3.4.10 Invasive Species

The extended habitat survey (April-September) will identify the presence of any invasive flora and fauna.

4.0 Conclusions

Wind Farm Site

Based on the desk study, no high-risk constraint which would threaten the feasibility of the project.

However, as outlined, there are protected species and habitats, as well as connectivity to designated sites. These shall be addressed through the Biodiversity chapter of the EIAR, AA Screening and Natura Impact Statement.

Mitigation measures to prevent water pollution and avoid negative impacts on protected habitats and fauna are almost certain to be required.

Grid Route Options

Grid route option 2 presents the least risks as, based on satellite imagery, it lacks hydrological connectivity, does not traverse protected habitats, and does not encroach on any designated sites.

5.0 References

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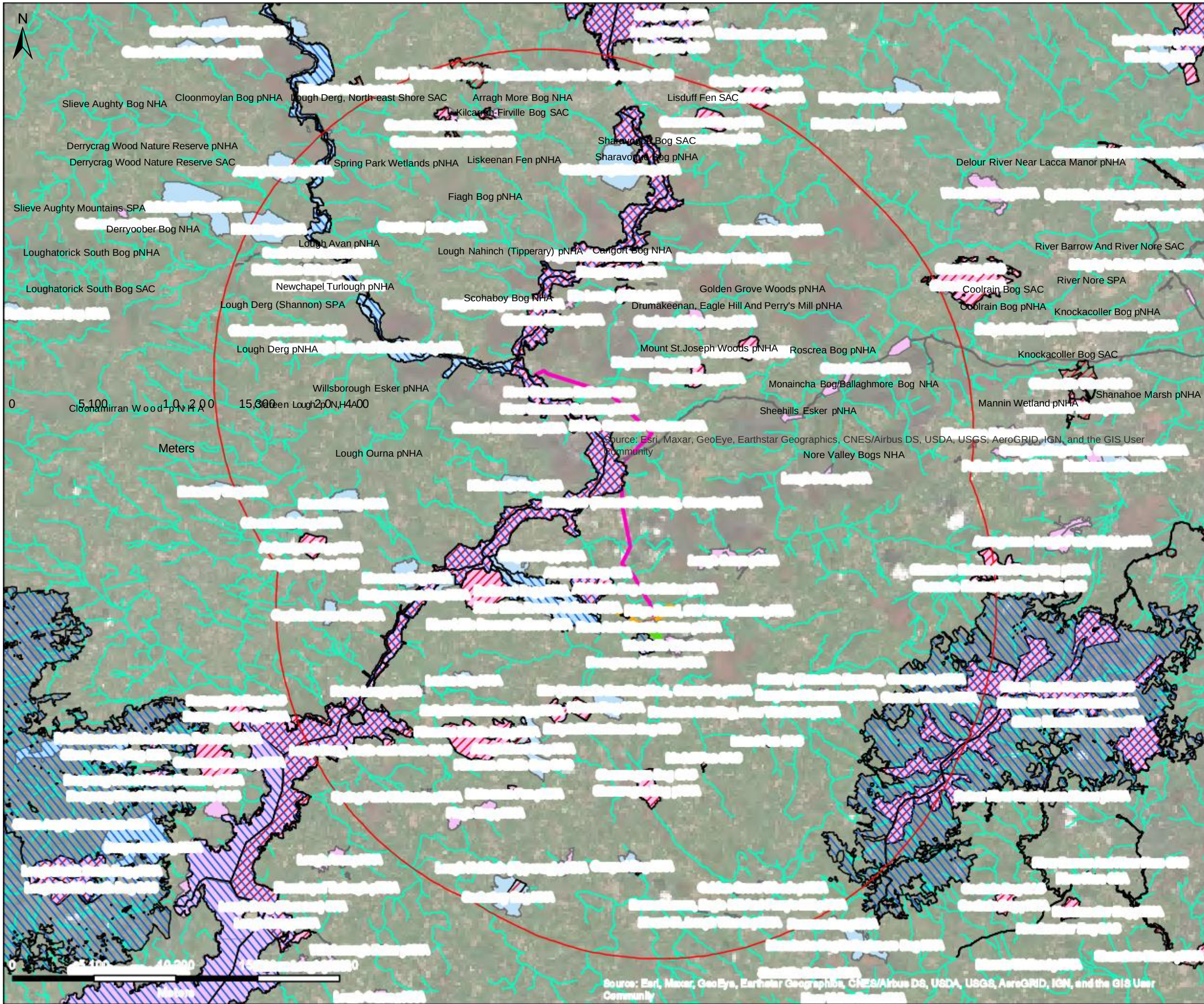
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Appendix 1

FIGURE 1 NATURA 2000 SITES

FIGURE 2 FIELD SURVEY RESULTS





GALETECH ENERGY SERVICES

CUSH WIND FARM SCOPING REPORT

CONSTRAINTS - GRID CONNECTION ROUTE OPTIONS

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FIGURE 2

Scale 1:225,081 @ A3 Date MARCH 2022



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Scoping Report

Cush Wind Farm Substation

Cush Wind Limited

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Stradone
Co. Cavan
H12NV06

Prepared by:

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City Gate, Mahon 1000, Cork, T12 W7CV

SLR Project No.: 501.065576.00001

Client Reference No: N/A

23 August 2024

Revision: 00

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
00	23 August 2024	Sinéad Clifford	Dr Jonathon Dunn	Dr Jonathon Dunn
	Click to enter a date.			
	Click to enter a date.			
	Click to enter a date.			
	Click to enter a date.			

Basis of Report

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Appendices

Appendix A	Designated Sites
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1.0 Introduction

This report outlines the likely ecological constraints present at the proposed Cush Wind Farm Substation site (hereafter ‘the proposed project site’)(Figure 1 of Appendix B), and their impact on the feasibility of the proposed project(s).

1.1 Proposed Project

The proposed project is comprised of the following:

- proposed on-site electricity control building;
- off-site substation; and
- underground grid route.

2.0 Methodology

2.1.1 Desk Study

We have carried out a desk study to inform the biodiversity input to the scoping report for the proposed project. The desk study involved using online resources to collate information on areas designated for nature conservation and previous ecological studies undertaken for other projects in the wider local area.

The following online and other resources were accessed as part of the desk study, searching for all relevant records up to 20km radius of the Project Site boundary:

- Satellite imagery¹
- Environmental Protection Agency (EPA) Maps² were accessed for other environmental information relevant to preparation of this report.
- Design drawings and the project description of the proposed project prepared by the Client.
- National Parks and Wildlife Service³ and the National Biodiversity Data Centre (NBDC)⁴ online resources were accessed for information on sites designated for nature conservation and information on protected habitats and species. Only records of protected species for the past 10 years are considered within this report as older records are unlikely to still be relevant given their age and the changes in land management that is likely to have occurred in the intervening period. Environmental Protection Agency (EPA) Maps were accessed for other environmental information, such as surface water features, relevant to preparation of this report.
- Offaly County Council planning portal⁵ and myplan.ie⁶ were accessed for information on other permitted or proposed projects and plans within 15km, including associated environmental and ecological assessments.

¹ <https://www.google.ie/maps> (last accessed 23 August 2024)

² <http://gis.epa.ie/> (last accessed 23 August 2024)

³ <https://www.npws.ie/> (last accessed 23 August 2024)

⁴ <https://maps.biodiversityireland.ie/> (last accessed 23 August 2024)

⁵ <https://www.eplanning.ie/OffalyCC/searchtypes> (last accessed 23 August 2024)

⁶ <https://myplan.ie/> (last accessed 23 August 2024)



- The BirdWatch Ireland website⁷ was accessed for information on birds of conservation concern from the last 10 years. Birds of Conservation Concern in Ireland (BoCCI), published by BirdWatch Ireland and the RSPB NI, is a list of priority bird species for conservation action on the island of Ireland. The BoCCI lists birds which breed and/or winter in Ireland and classifies them into three separate lists; Red, Amber and Green; based on the conservation status of the bird and hence their conservation priority. Birds on the Red List are those of highest conservation concern, Amber List are of medium conservation concern and Green List are not considered threatened. Whilst all bird species are protected under the Wildlife Acts (1976, as amended), only records of species that are Red or Amber-listed on BoCCI or listed on Annex I of the Birds Directive were sought.
- Records of protected flora and fauna, as well as invasive non-native plant species within 2km were sought from records held by the NBDC.

2.2 Scoping Survey

A scoping survey was carried out on the 27th and 28th March 2024 to search for any habitats or species that are either protected by law or are otherwise subject to legal restrictions. Photographs, GPS coordinates and target notes were recorded. Conditions were suitable for survey.

2.3 Limitations

Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that important habitats or protected species not identified during the data search do in fact occur within the vicinity of the Project Site. Interpretation of maps and aerial photography has been conducted in good faith, using recent imagery, but it has not been possible to verify the accuracy of any statements relating to land use and habitat context outside of the field study area.

No access to the areas opposite the Project Site encompassing Ross and Glenns Eskers pNHA was possible, as it was within third-party lands and occupied by a herd of horses. However, given its designation, it is assumed to be a sensitive site and will be treated hereafter as such.

The site visit was high-level in nature and so should not be considered in lieu of more detailed ecological surveys.

3.0 Results

3.1 Designated Sites

There are nineteen SACs, five SPA, three NHA and sixteen pNHAs within 20 km of the Project Site, with details provided in Appendix A and shown in **Figures 2 and 3**. There are no Ramsar sites and nature reserves within this distance.

Those with potential connections to the Project include:

- **Hydrogeological connections:**
 - Lough Coura pNHA⁸.

⁷ <https://birdwatchireland.ie/> (last accessed 23 August 2024)

⁸ While not technically designated sites, pNHAs have been included here in recognition that they are often included within this grouping in County Council development plans



- **Downstream hydrological connections:**

- River Little Brosna Callows SPA
- Middle Shannon Callows SPA
- Lough Derg (Shannon) SPA
- All Saints Bog and Esker SAC
- River Shannon Callows SAC
- Lough Derg, North-east Shore SAC
- Scohaboy (Sopwell) Bog SAC

- **Ecological connections:**

- Dovegrove Callows SPA
- River Little Brosna Callows SPA
- River Little Brosna Callows NHA
- All Saints Bog SPA
- Middle Shannon Callows SPA
- Lough Derg (Shannon) SPA
- River Suck Callows SPA
- Ridge Road, SW of Rapemills SAC
- Woodville Woods pNHA

3.2 Habitats

There are no previously mapped ancient woodlands, Annex I habitats or any groundwater dependent terrestrial ecosystems (GWDTEs) within the Project Site.

The Annex I priority habitat 6210 Orchid-rich calcareous grassland* is situated ca. 240m west of the Project Site. There is also a record of 7230 Alkaline fens and 7140 Transition mires ca. 340m south of the Project Site (exact distribution not available).

The Project Site is dominated by improved agricultural grassland (GA1), and bordered primarily by hedgerows (WL1). Habitats recorded are shown in Figure 4 in Appendix B.

The most sensitive habitats within the Project Site are:

- Treeline (WL2)
 - Potential habitat for nesting birds and roosting bats
- Hedgerow (WL1)
 - Potential habitat for nesting birds
- Drainage ditch (FW4)
 - Potential for water-quality impacts on animal features such as common frog, and provides potential connectivity to watercourses in the wider environment



3.3 Species

3.3.1 Flora

There are no desktop records of rare, protected or invasive plants at the Project Site . The scoping visits did not identify any rare or protected plant species.

3.3.2 Mammals (excluding bats)

There are no desktop record of protected mammal species recorded within Project Site , and no evidence was recorded during the scoping visits. There are, however, records of badger *Meles meles* in the 1km grid squares N0408 and N0409 which overlap the Project Site .

There could be badger setts within third-party lands alongside the Project Site , however these were not accessible.

3.3.3 Bats

Regarding bats, the habitats at the substation site are of moderate importance for commuting and foraging bats. There were also three trees with moderate bat roosting potential within the Project Site.

3.3.4 Birds

There are no desktop records of rare or protected birds at the Project Site.

The hedgerows and treelines present offer suitable nesting and foraging habitat for passerines and other birds.

The improved agricultural grassland habitats afford foraging opportunities for wildfowl that are qualifying interests (QIs) of nearby SPAs. These could also be used by ground nesting birds, although this is unlikely due to heavy livestock usage.

3.3.5 Invertebrates

There are no desktop records of rare or protected invertebrates and none were recorded during the scoping visits. It is unlikely that the habitats within and bounding the Project Site are suitable for rare and protected invertebrate species.

3.3.6 Amphibians

There are no desktop records of rare or protected reptiles and none were recorded during the scoping visits. There are records of common frog *Rana temporaria* within the project site, and the species was recorded adjacent to the Project Site . Drainage ditches may also provide breeding habitat for amphibians.

3.3.7 Reptiles

No reptiles were recorded within the Project Site . However, potential for common lizard should be considered within the EIAR chapter.



4.0 Conclusion

Item	Key Constraint	Recommendation
Designated Sites	There are a number of designated sites with a potential connection to the Project Site. In the absence of mitigation measures, there may be significant impacts on these sites.	Avoid crossing the drainage ditches which may be connected to watercourses draining to designated sites. Alternatively, employ culverting but this may require assessment in relation to flooding. Potential impacts on designated sites will need to be addressed in the EIAR and NIS along with mitigation measures to prevent negative impacts to these sites and the species/habitats for which they are designated. Feeding distribution surveys should include the Project Site during the coming non-breeding bird survey season to inform mitigation to avoid disturbance / displacement may be required.
Habitats	Drainage ditch running through the proposed substation location. This could be connected to watercourses in the wider area, although this could not be confirmed without accessing third party lands. The loss of hedgerows would contravene objective BLP-24 of the Offaly County Development Plan 2021-2027, which states: <i>"It is Council policy to support the protection and management of existing networks of woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character, and to strengthen local networks"</i> .	Avoid the drainage ditches. Alternatively, culverting but this may require assessment in relation to flooding. Lost hedgerows would need to be replaced like-for-like.
Flora	None	None.
Mammals (excluding bats)	None	None.
Bats	There are three trees with moderate bat roosting potential present within the footprint of the proposed substation.	The trees should be further surveyed, and mitigation implemented to avoid potential impacts on bats. This can be addressed in the EIAR.
Birds	Hedgerows, treelines, and grassland may provide foraging and nesting habitat.	Plan construction to take place outside the bird nesting period (i.e. outside 01 st March – 31 st August, inclusive). Feeding distribution surveys should include the Project Site during the coming non-breeding bird survey season to inform mitigation to avoid disturbance / displacement may be required.



Item	Key Constraint	Recommendation
Invertebrates	None	None.
Amphibians	Drainage ditches running though the proposed substation location which can provide habitat for amphibians. Common frog recorded in an adjacent area.	Avoid the drainage ditches. Alternatively, culverting but this may require assessment in relation to flooding.
Reptiles	None	None.



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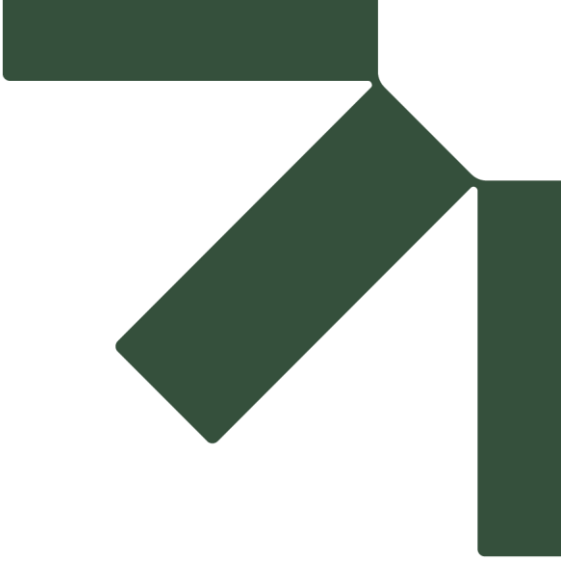
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Appendix A Designated Sites

Scoping Report

501.065576.00001 Cush WF Substation - Scoping Report_Final.pdf

Cush Wind Limited

SLR Project No.: 501.065576.00001

23 August 2024

Table A 1 Internationally Designated Sites

Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
000919	Ridge Road, SW of Rapemills SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	0.37	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC. However, there is potential for ingress of dust and sediment.
004137	Dovegrove Callows SPA	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	0.62	The Site is within the Core Foraging Range (CFR) for this Species of Conservation Interest (SCI), i.e. 5-8km. The SPA is adjacent to the terminus of the GCR.
004086	River Little Brosna Callows SPA	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	2.01	Based on aerial imagery, there may be a hydrological connection via the Rapemills river into which the drainage ditches on site drain. The Site is within the CFR for whooper swan, golden plover, black-headed gull, black-tailed godwit, and Greenland white-fronted goose. A CFR has not been established for the other SCI, so the maximum of



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
		Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]		20km (as per Nature Scot, 2018) has been assumed. The SPA is within the same groundwater body as the Site. As such, there is potential for connection to this pNHA so should be further investigated by the hydrologist.
000566	All Saints Bog and Esker SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	2.21	Based on aerial imagery, there may be a hydrological connection to the Rapemills river. The river runs along the boundary of this SAC. As such there is a potential hydrological connection to the SAC.
004103	All Saints Bog SPA	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	2.22	The Site is within the Core Foraging Range (CFR) for this Species of Conservation Interest (SCI), i.e. 5-8km.
000641	Ballyduff/Clonfinane Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	5.91	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
004096	Middle Shannon Callows SPA	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Corncrake (<i>Crex crex</i>) [A122] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]	6.11	Based on aerial imagery, there may be a hydrological connection via the Rapemills river into which the drainage ditches on site drain. The Site is within the CFR for whooper swan, golden plover, black-headed gull, black-tailed godwit, and Greenland white-fronted goose. A CFR has not been established for the other SCI, so the maximum of 20km (as per Nature Scot, 2018) has been assumed.
000216	River Shannon Callows SAC	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] Limestone pavements [8240] 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] <i>Lutra lutra</i> (Otter) [1355]	6.11	Based on aerial imagery, there may be a hydrological connection via the Rapemills river into which the drainage ditches on site drain.
002353	Redwood Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	8.02	There is no hydrological, hydrogeological, or ecological connection



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
		Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]		between the Site and this SAC.
002147	Lisduff Fen SAC	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	8.71	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
000585	Sharavogue Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.09	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
002207	Arragh More (Derrybreen) Bog SAC	Degraded raised bogs still capable of natural regeneration [7120]	9.16	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
000647	Kilcarren-Firville Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	9.86	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
002236	Island Fen SAC	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Alkaline fens [7230]	10.11	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
001683	Liskeenan Fen SAC	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]	12.68	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
000581	Moyclare Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	14.49	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
004160	Slieve Bloom Mountains SPA	Hen Harrier (<i>Circus cyaneus</i>) [A082]	14.51	This SPA is designated for breeding hen harrier population. The project site is outside the core foraging range for this species during the breeding season, i.e. 2-10km. It is also unlikely the habitats at the Project Site are suitable for wintering hen harrier.
002241	Lough Derg, North-east Shore SAC	<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240]	15.33	Based on aerial imagery, there may be a hydrological connection via the Ballyfinboy river and Rapemills river into which the drainage ditches on site drain.



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
		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] <i>Taxus baccata</i> woods of the British Isles [91J0]		
004058	Lough Derg (Shannon) SPA	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Tufted Duck (<i>Aythya fuligula</i>) [A061] Goldeneye (<i>Bucephala clangula</i>) [A067] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	15.57	Based on aerial imagery, there may be a hydrological connection via the Rapemills river into which the drainage ditches on site drain. The Site is within the CFR for cormorant. A CFR has not been established for the other SCI so the maximum of 20km (as per Nature Scot, 2018) has been assumed.
000412	Slieve Bloom Mountains SAC	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] 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]	16.81	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
004097	River Suck Callows SPA	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	16.94	The Site is within the CFR for whooper swan, golden plover, and Greenland white-fronted goose. A CFR has not been established for the other SCI, so the maximum of 20km (as per Nature Scot, 2018) has been assumed.



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
000575	Ferbane Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	17.12	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
002206	Scohaboy (Sopwell) Bog SAC	Degraded raised bogs still capable of natural regeneration [7120]	17.68	Based on aerial imagery, there may be a hydrological connection via the Rapemills river into which the drainage ditches on site drain.
000859	Clonaslee Eskers and Derry Bog SAC	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	19.26	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
000576	Fin Lough (Offaly) SAC	Alkaline fens [7230] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	19.38	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.
002356	Ardgraique Bog SAC	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	19.79	There is no hydrological, hydrogeological, or ecological connection between the Site and this SAC.



Table A 2 Nationally Designated Sites

Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
000920	Ross And Glenns Eskers pNHA	Gravel esker ridge grading into a cutaway bog of good peat depth. The esker ridge supports a good example of a substantially undisturbed Hazel scrub and forms an important ecological example of landscape formation. The adjoining cutaway bog and fine birch woodland add habitat diversity to this site.	0.00	The Site overlaps with this pNHA.
000927	Woodville Woods pNHA	Large stand of woodland comprised of oak, hazel, beech, with bramble, ivy, primrose, bluebell, and dog's mercury. An accreted lake colonised by common reed, common club-rush, water horsetail, bulrush. Snipe, fallow deer, pine marten, red squirrel and badger present.	0.16	There is a potential ecological connection between the pNHA and the Site via the mobile species using the pNHA. Due to the proximity to the Site, there is potential for ingress of dust/sediment.
000919	Ridge Road, SW Of Rapemills pNHA	No site synopsis available. However, it overlaps with Ridge Road, SW of Rapemills SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	0.37	As for Ridge Road, SW of Rapemills SAC.
000010	Dovegrove Callows pNHA	No site synopsis available. However, it overlaps with Dovegrove Callows SPA. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	1.17	As for Dovegrove Callows SPA.
000564	River Little Brosna Callows NHA	Peatlands [4] Birds [12]	1.99	The Site is within the CFR for whooper swan, golden plover, and Greenland white-fronted goose. A CFR has not been established for the other SCI, so the maximum of



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
				20km (as per Nature Scot, 2018) has been assumed.
000566	All Saints Bog And Esker pNHA	No site synopsis available. However, it overlaps with All Saints Bog And Esker SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	2.22	As for All Saints Bog And Esker SAC
000909	Lough Coura pNHA	A small in-filled lake with very few damp areas found. Purple moor grass, common reed, black bog-rush, great fen sedge, broad-leaved pondweed, mare's-tail, lesser tussock sedge, fly orchid and narrow-leaved marsh orchid have been recorded here.	4.09	This pNHA is within the same groundwater body as the Site. As such, there is potential for connection to this pNHA so should be further investigated by the hydrologist.
000569	Birr (Domestic Dwelling No.1, Occupied) pNHA	A nursery roost for the Leisler's Bat (ca. 100 bats).	4.19	The Site is outside the core sustenance zone (CSZ) for this species. Thus, there is no ecological or other connection.
000648	Killeen Bog NHA	Peatlands [4]	4.77	There is no hydrological or ecological connection between the Site and this SAC.
000641	Ballyduff/Clonfinane Bog pNHA	No site synopsis available. However, it overlaps with Ballyduff/Clonfinane Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	5.95	As for Ballyduff/Clonfinane Bog SAC
002058	Bracken's Dwelling, Near Whiteford pNHA	A nursery roost for the Leisler's Bat (ca. 80 bats).	5.98	The Site is outside the core sustenance zone (CSZ) for this species. Thus, there is no ecological or other connection.

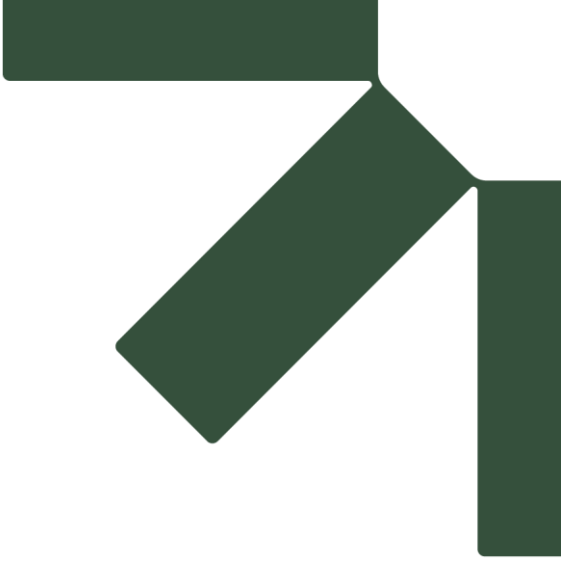


Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
000216	River Shannon Callows pNHA	No site synopsis available. However, it overlaps Moyclare Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	6.11	As for Moyclare Bog SAC
002059	Cloghanbeg pNHA	A nursery roost for the Leisler's Bat (ca. 50 bats).	7.01	The Site is outside the core sustenance zone (CSZ) for this species. Thus, there is no ecological or other connection.
000567	Banagher (Domestic Dwelling, Occupied) pNHA	A summer and possibly winter roost of the Brown Long-eared Bat (ca. 60 bats).	7.27	The Site is outside the core sustenance zone (CSZ) for this species. Thus, there is no ecological or other connection.
000654	Redwood Bog pNHA	No site synopsis available. However, it overlaps Redwood Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	8.03	As for Redwood Bog SAC
000640	Arragh More Bog NHA	Peatlands [4]	8.82	There is no hydrological or ecological connection between the Site and this SAC.
000585	Sharavogue Bog pNHA	No site synopsis available. However, it overlaps Sharavogue Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.08	As for Sharavogue Bog SAC
002104	Grand Canal pNHA	A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.	9.51	There is no hydrological, hydrogeological, or ecological connection between the Site and this pNHA.



Site Code	Site Name	Qualifying Interests	Distance from Proposed Project Site (km)	Connectivity?
000647	Kilcarren-Firville Bog pNHA	No site synopsis available. However, it overlaps Kilcarren-Firville Bog SAC. In the absence of a site synopsis, its Natura 2000 designation takes precedence.	9.87	There is no hydrological or ecological connection between the Site and this SAC.





Appendix B Figures

Scoping Report

501.065576.00001 Cush WF Substation - Scoping Report_Final.pdf

Cush Wind Limited

SLR Project No.: 501.065576.00001

23 August 2024

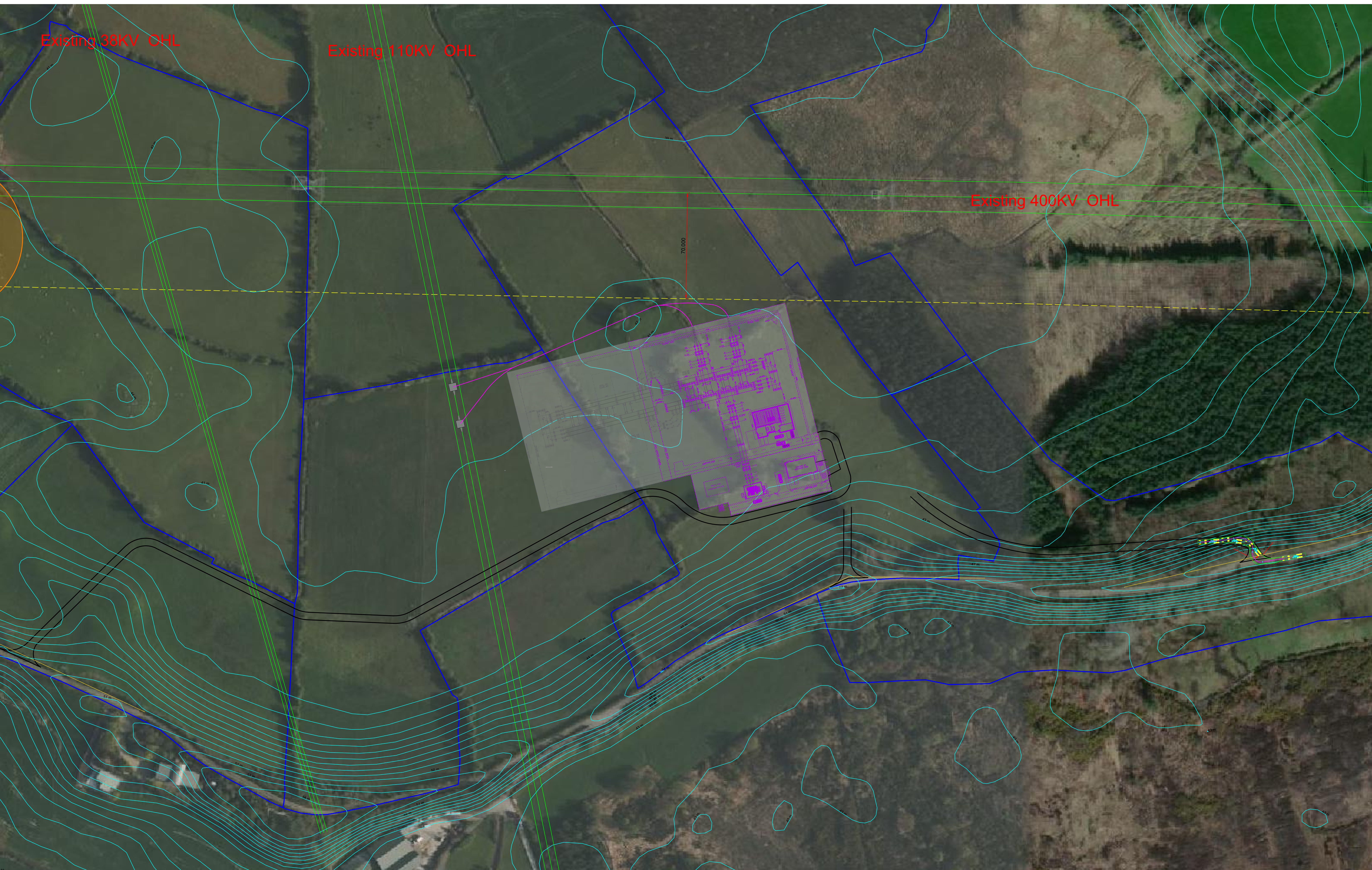


FIGURE 1

- Survey Area
- Special Protection Areas within 20km
- Special Areas of Conservation within 20km
- 20km Buffer of Study Area



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CUSH WIND FARM

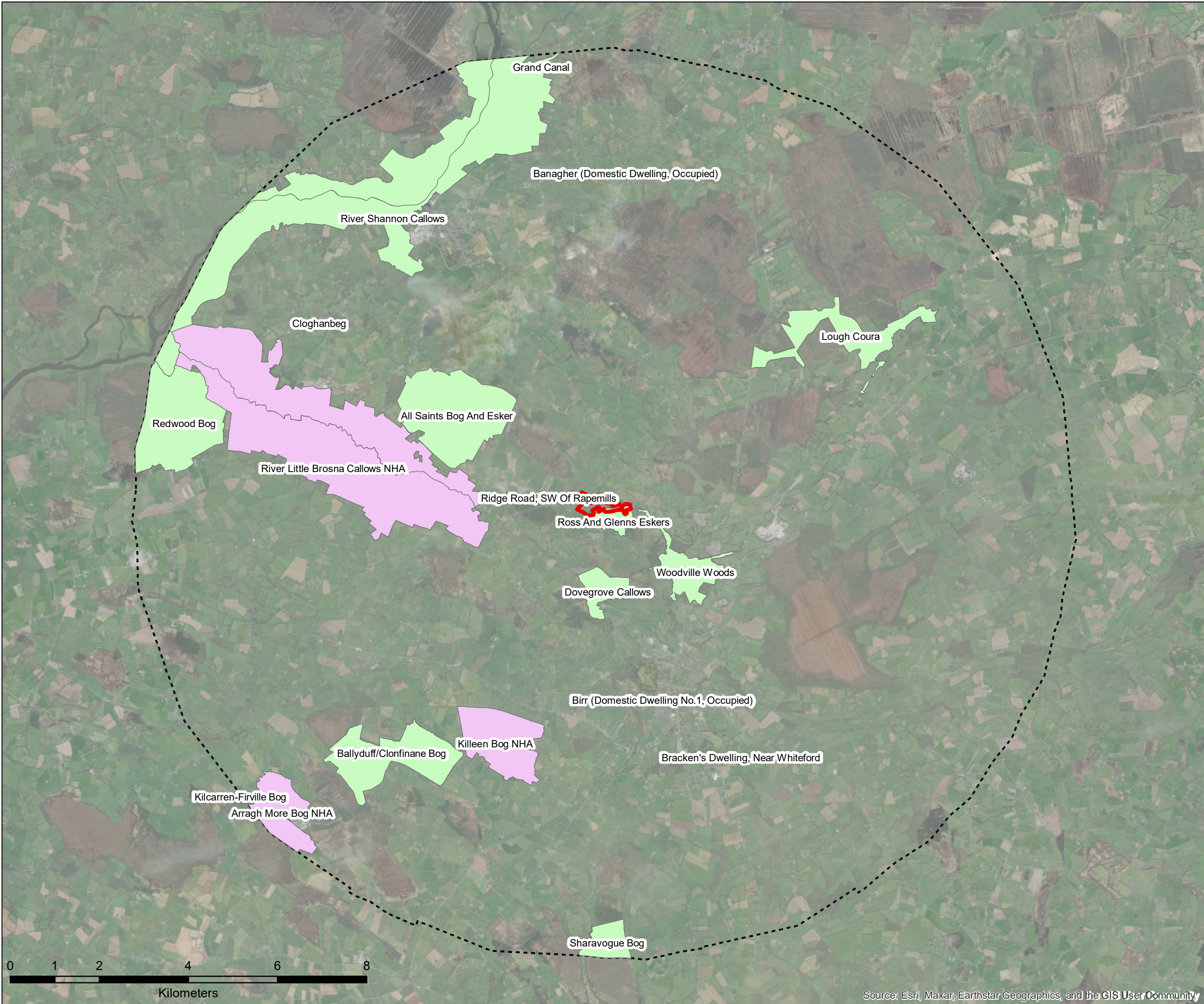
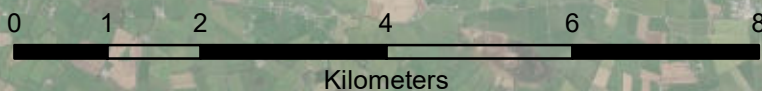
SUBSTATION SCOPING REPORT

NATURA 2000 SITES

FIGURE 2

Scale 1:160.447 @ A3	Date AUGUST 2024
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- Survey Area
- Natural Heritage Areas within 10km
- Proposed Natural Heritage Areas within 10km
- 10km Buffer of Study Area

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

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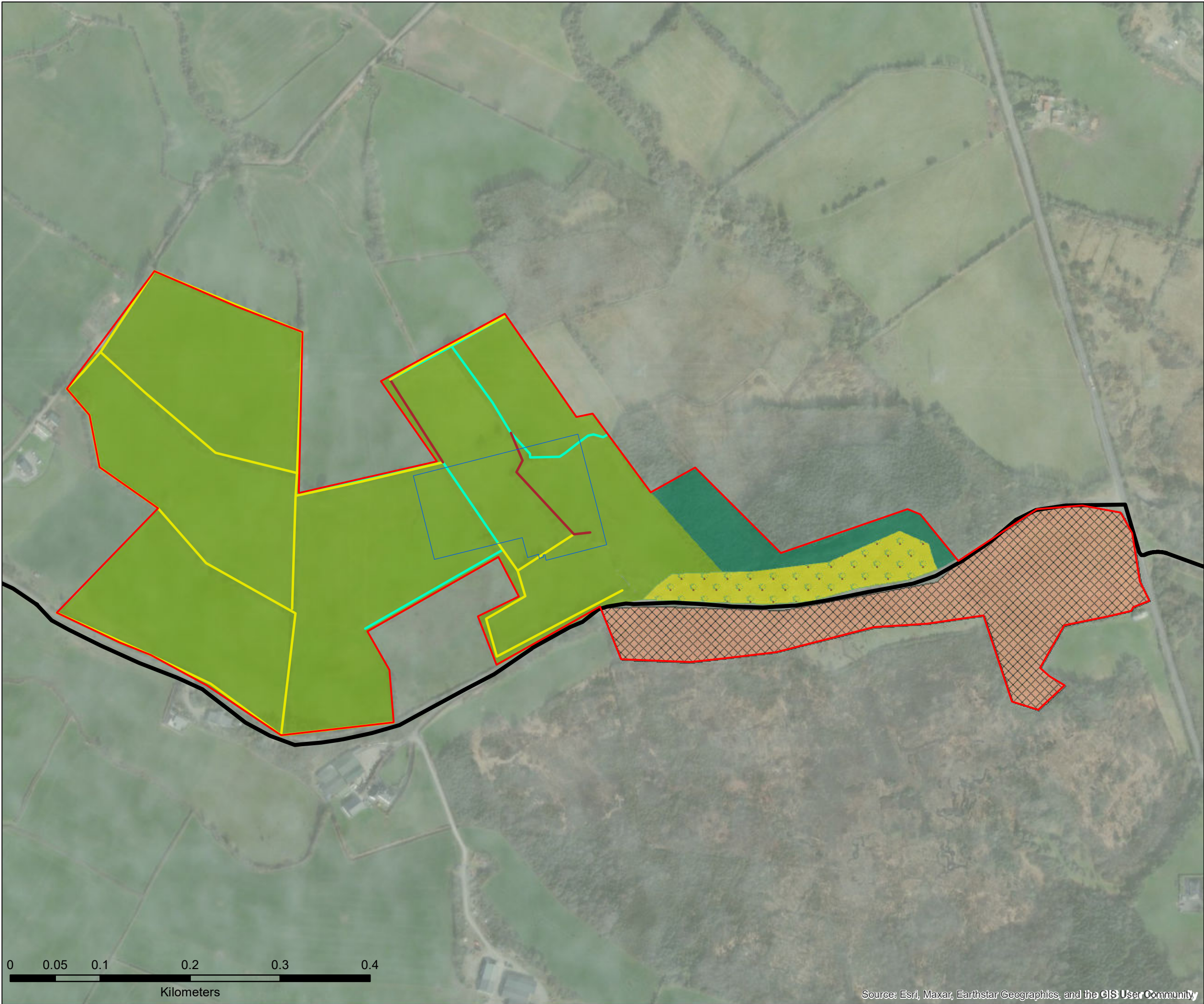
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CUSH WIND FARM
SUBSTATION SCOPING REPORT

NATIONALLY DESIGNATED AREAS

FIGURE 3

Scale	Date
1:81,264 @ A3	AUGUST 2024



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- Survey Area
- Proposed Substation Location
- Road

Habitats

- Drainage ditch
- Hedgerow
- Treeline
- (Mixed) broadleaved woodland
- Conifer plantation
- Improved agricultural grassland
- Sensitive - Inaccessible (part of Ross and Glenn Eskers pNHA)

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CUSH WIND FARM
SUBSTATION SCOPING REPORT

HABITATS

FIGURE 4

Scale
1:4,016 @ A3

Date
AUGUST 2024



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ANNEX 3 – LANDSCAPE SCOPING REPORT



macroworks

LANDSCAPE & VISUAL

Scoping Report

Proposed Cush Wind Farm Phase II

Cush, Co. Offaly.

Prepared by Macro Works Ltd

March 2025



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Registered
Landscape
Architect



1. LANDSCAPE AND VISUAL SCOPING REPORT

1.1 INTRODUCTION

The purpose of this Scoping Report is to describe the scoping methodology and present outcomes of initial desk study and fieldwork stages and also establish the scope of work and methods applied in the identification and assessment of landscape and visual impacts associated with the proposed Cush Wind Farm. It will present key landscape and visual receptors and highlight potential effects that will be assessed. Another key element of the landscape and visual scoping report is the selection of the preliminary set of representative Viewpoints (VPs), from which, it is intended to prepare photomontage simulations of the development and undertake the visual impact assessment.

1.1.1 Proposed Development

The proposed Cush Wind Farm Phase II is situated in a relatively flat area of terrain that comprises of a mix of open peat bog, conifer forest plantations and pastoral farmland. It is situated across the townlands of Ballycollin, Whigsborough, Eglis, and Galros East in County Offaly, 6km north of the settlement of Birr. The site 5.5km northeast of the Offaly - Tipperary border, and approximately 9km southeast of the Offaly – Galway border. The periphery of the study area overlays County Roscommon to the north and County Laois to the west.

1.2 STUDY AREA

The Wind Energy Development Guidelines published by the Department of the Environment, Heritage and Local Government (2006) specify different radii for examining the Zone of Theoretical Visibility of proposed wind farm projects ('ZTV'). The extent of this study area is influenced by turbine height as follows;

- 15km radius for blade tips up to 100m;
- 20km radius for blade tips greater than 100m; and
- 25km in order to incorporate features of national or international renown.

In the case of this project, the blade tips will be over 100m high and, thus, the minimum ZTV radius required is 20km from the outermost turbines of the proposed development.

1.2.1 Consultation

It is considered that consultation on the landscape and visual impact assessment will be undertaken with the Local Authorities - Offaly, Galway, Roscommon, Laois County Councils, along with local residents.

1.3 SCOPING METHODOLOGY

Scoping for this LVIA will consist of a combination of 'Desk Study' and fieldwork in order to understand the nature of the receptors within the study area and the nature of likely impacts that are likely to occur as a result of the proposed development. The Desk Study element proceeds fieldwork as the latter is used to scope-in or scope-out potentially affected receptors that are identified as part of the desk study.

Establishing the landscape baseline includes consideration of the geographic location and landscape context of the proposed wind farm site as well as the essential landscape character and salient features of the wider Study Area and is discussed with respect to; landform and drainage and; vegetation and land use. The visual baseline is more population based, but still overlaps with elements of the landscape baseline. The visual baseline is discussed in relation to; centres of population and houses; transport routes and; public amenities and facilities.

1.3.1 **Desk Study**

The desktop study will comprise of the following:

- Review of a Zone of Theoretical Visibility (ZTV) map, which indicates areas from which the development is potentially visible in relation to terrain within the Study Area;
- Review of relevant County Development Plans, particularly with regard to sensitive landscape and scenic view/route designations;
- Online review of tourism, recreational and heritage features within the study area that may be potential visual receptors.
- Selection of potential Viewpoints (VPs) from key visual receptors to be investigated during fieldwork for actual visibility and sensitivity;
- Production of wireframe images of the development at each potential viewpoint (illustrating the turbines in a bare-ground context) to aid fieldwork / viewpoint selection.

1.3.2 **Fieldwork**

Fieldwork to be carried out during Spring/Summer in 2025 and to comprise of the following:

- Examination of the salient landscape character of the site and its immediate surrounds as well as the wider study area.
- Investigation of potential viewpoint locations identified at the desk study stage and selection / rejection of each.
- Selection of other relevant viewpoints that may not have been apparent from the desk study (local monuments, walkways etc.)
- Capture high quality base photography from which to prepare photomontages of the proposal.
- Examine the route of the proposed grid connection options.
- Preparation of a viewpoint selection report and associated map for consultation purposes (Planning Authorities) indicating the intended VP selection set to be used for the preparation of photomontages to support the visual impact assessment.

1.4 **LANDSCAPE AND VISUAL POLICY CONTEXT AND DESIGNATIONS**

1.5 **POLICY PLAN AND CONTEXT**

The European Landscape Convention promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues. The Convention was adopted on the 20th October 2000 and came into force on the 1st March 2004. The Convention was ratified by Ireland in 2002. As one of the obligations under the convention, a draft National Landscape Strategy was issued for public consultation by the **Department of Arts, Heritage**, Regional, Rural and **Gaeltacht** Affairs, (formally the Department of Art, Heritage and the Gaeltacht in July 2014. Following consideration of submissions, the 'National Landscape Strategy for Ireland 2015-2025' was published in mid-2015 by the Department of Arts, Heritage and the Gaeltacht.

One of the key objectives of the National Landscape Strategy, and a requirement of the European Landscape Convention, is to prepare a National Landscape Character Assessment (LCA). However, this is not likely to be prepared prior to the submission of the planning application. On this basis, county level Landscape Character Assessments for County Offaly and County Tipperary (contained within the respective County Development Plans) will be a key consideration. With those through the wider study (Co. Galway, Co. Roscommon, Co. Laois) area reviewed for key sensitivities and considerations. In all cases, these Landscape Character Assessments have also been integral to the development of wind energy strategies / policy contained within the CDPs.

Wind Energy Development within the Republic of Ireland is undertaken in accordance with the Department of the Environment, Heritage and Local Government Wind Energy Development Guidelines (2006). Recommendations on the siting and design of wind energy developments are provided in Chapter 6 of the current Guidelines based on six potential landscape character types. The proposed development is considered to be most associated with the 'Flat Peatland' and 'Hilly and Flat Farmland' landscape type. This guidance will be a key consideration of the landscape and visual assessment.

The Landscape and Visual Assessment of Cush Wind Farm Phase II will be undertaken in strict accordance with the Landscape Institute and the Institute of Environmental Management and Assessment publication entitled 'Guidelines for Landscape and Visual Impact Assessment' – Third Edition (2013). This is recognised as the principal best practice guidance for landscape and visual assessment of all forms of development in Ireland and the UK.

Regard will also be given to the overarching Environmental Impact Assessments guidelines and advice notes set out by the EPA:

- Environmental Protection Agency (EPA) publication 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022)

Other relevant LVIA and wind energy specific guidance that will be considered includes;

- 'Photography and Photomontage in Landscape and Visual Impact Assessment', Landscape Institute Technical Guidance Note 06/2019;
- NatureScot (formerly Scottish Natural Heritage) Visual representation of wind farms: Best Practice Guidelines (version 2.2 - 2017);
- NatureScot (formerly Scottish Natural Heritage) Guidance Note: Cumulative Effect of Wind Farms (2012).

The most relevant landscape and visual policies with regard to the proposed wind farm development are contained within the County Development Plan for County Offaly, and County Tipperary, with secondary consideration to those within County Galway, County Roscommon and County Laois.

1.5.1 **Offaly County Development Plan 2021-2027**

As with previous iteration, the latest Offaly County Development Plan does not incorporate a traditional Landscape Character Assessment. Instead, it simply categorises the landscape of the county into High, Moderate and Low sensitivity classes based on topographical and land cover features such as eskers and peatland.

The Cush Phase II site is classified as Medium and Low sensitivity on the basis of being within cutaway peatland, mixed conifer/woodland and farmland, whereas, areas of 'High' sensitivity in the surrounding area are associated with Eskers, Lough Boora and the Shannon River corridor (including Clonmacnoise). Medium sensitivity areas are described as;

“Moderate sensitivity areas can accommodate development pressure but with limitations in the scale and magnitude. In this category of sensitivity, elements of the landscape can accept some changes while others are more vulnerable to change.”

Low sensitivity landscapes are described as:

“Low sensitivity areas are robust landscapes which are tolerant to change, such as the county’s main urban and farming areas, which have the ability to accommodate development.”

A number of ‘Areas of High Amenity’ are also designated in County Offaly, eight (of 13) of which are located within the study area and include the Shannon River and Callows (1), The Grand Canal (2), Lough Boora Discovery Park (3), Pallas Lake (4), Slieve Bloom Mountains (5), Eiscir Riada (9), Other Eskers (11), Clonmacnoise (12). These Areas of High Amenity (AHA) are deemed “worthy of special protection / enhancement due to their uniqueness and scenic / amenity value” and the designation is “additional to statutory national and European designations which may overlap with these AHA”.

The Wind Energy strategy included in the current CDP overlays these higher sensitivity areas, as well as the scenic views and routes, in order to classify areas of the county for a Wind Energy Strategy. The site/central study area is located within areas 7 and 8. Within area 7: Area generally south of Cloghan and Birr Environs, the ‘Area generally south of Cloghan’ is deemed “Open for consideration for Wind Energy Development in principle”, while ‘Birr Environs’ is deemed “not suitable for windfarms”. Within Area 8 ‘Area generally south and west of Kilcormac’ is deemed “Area not deemed Suitable for Windfarms”. However, the more detailed ‘Wind Energy Designations’ map shows that the site generally aligns with the identified ‘Areas Open for Consideration for Wind Energy Development’.

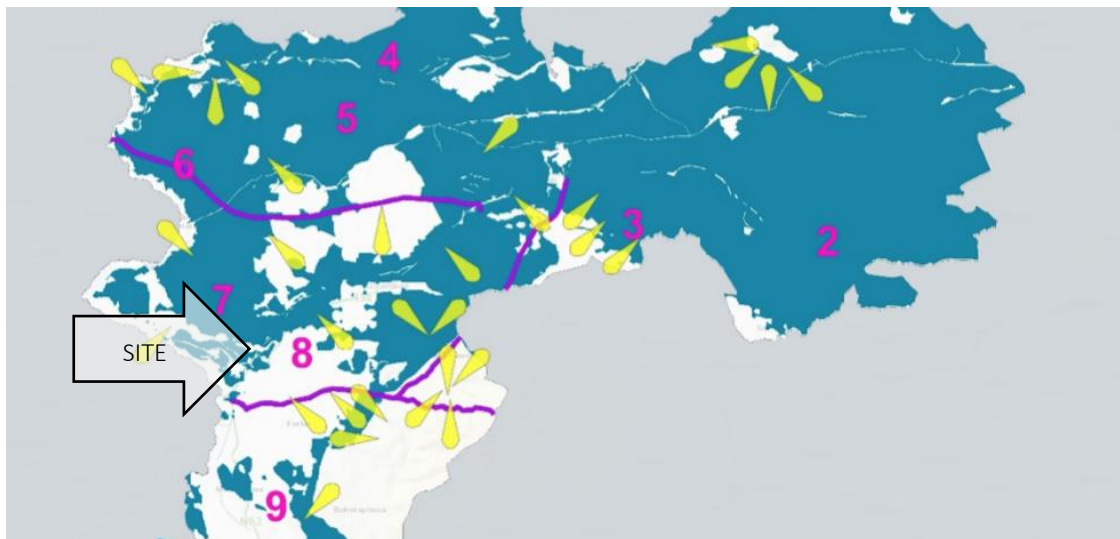


Figure 1.1 Wind Energy Strategy Map No. 8: Protected Views and Potential Wind Energy Areas

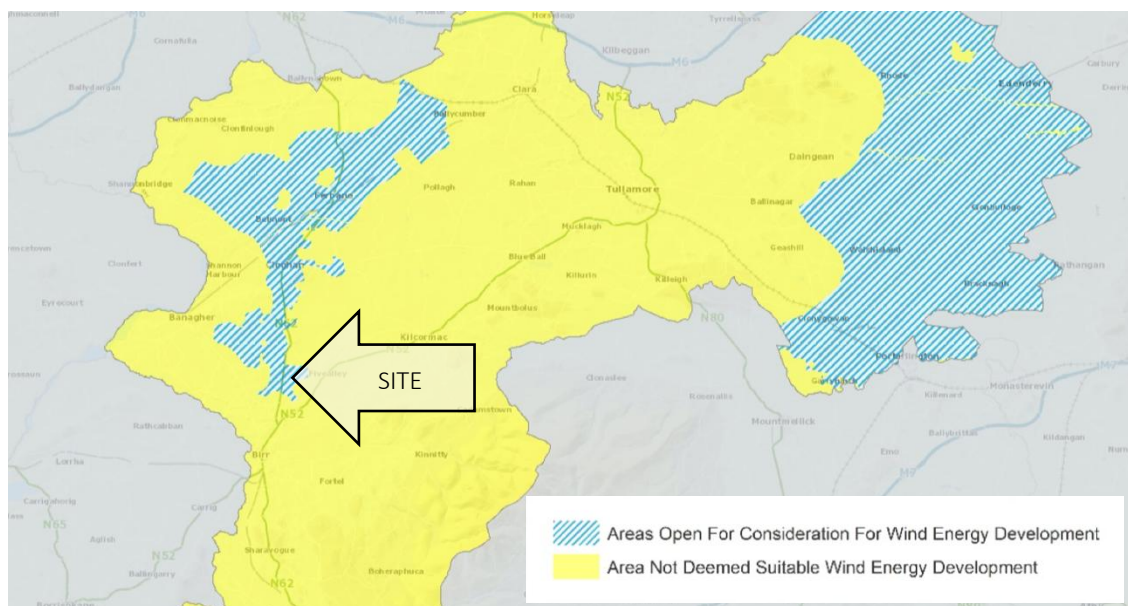


Figure 1.2 Wind Energy Strategy Map No. 10: Wind Energy Strategy Designations

1.5.2 Tipperary County Development Plan 2022-2028

1.5.2.1 *Tipperary Appendix 3 Landscape Character Assessment and Schedule of Views and Routes*

Whilst the proposal site is wholly contained within county Offaly, the Tipperary county border is situated less than 4km from the site at its nearest point. The nearest and most relevant landscape character areas in County Tipperary are 'LCA 7 – Borrisokane lowlands', which is described as "Peatlands and wet mixed farmlands. The plains also contain large areas where impeded drainage and peat formation give rise to less densely inhabited areas and more marginal agriculture with very open vistas", and LCA 11 – Lakeland Waterside (Shannon Callows), which is described as "some of Ireland's most important and cherished large lake scenery and recreation areas". The following sensitivity and compatibility with 'Wind Farm' land use apply for each landscape character area: LCA 7: Borrisokane Lowlands has been classified with a Moderate sensitivity to change, reduced capacity, and low compatibility with wind farms land use. LCA 7: Borrisokane Lowlands has been classified with a Class 3 High sensitivity to change, low capacity, and least compatibility with wind farms land use.

Other Tipperary LCAs within the study area include 'LCA 5 – Templemore Plains' and LCA 1 - Urban and Fringe Areas.

1.5.3 County Development Plan Scenic Designations

Scenic views and routes designations from both the Offaly and Tipperary County Development Plan will be considered as well as those from other Planning Authority jurisdictions (Galway, Roscommon, Laois) within the study area. Those considered relevant in terms of viewing direction and potential visibility of the proposed development will be included as a representative viewpoint for the purposes of the visual impact assessments. A list of those designated scenic views that have been scoped out and the reasoning why will be included within the Viewshed Reference Point Selection Report.

1.6 POTENTIAL IMPACTS

Analysis of ZTV maps provides the basis for initial desk based VP selection, as these maps identify from where in the study area the development is potentially visible in a bare-ground scenario. Importantly, they also indicate areas where there is no potential for visibility which can then be confidently scoped-out of further investigation / assessment. Overall, there is potential for short range (0-5km), mid-range (5-15km) and long range (15km+) views of the development, but with the highest potential for significant landscape and visual impacts to occur for short range views, where these might coincide with highly sensitive receptors. Views of the proposed development from beyond 20km, though feasible, could only occur from elevated vantage points and in very clear viewing conditions. At such distances, any visual impacts from the proposed development are not considered to have potential for significant effects even at highly sensitive receptor locations.

Potential landscape and visual impacts could also occur in respect of ancillary development such as access roads, hard stands, and grid connection.

1.6.1 Analysis of ZTV maps

The ZTV maps show that comprehensive visibility of all the proposed turbines will be theoretically afforded from all but some small sections of the central study area (<5km from the site), with some sections extending up to 20km, presenting with more cohesive visibility to the north than to the south. This relatively high level of comprehensive visibility relates to the notably flat nature of the landscape in the central study area which principally comprises of large peatbogs and pastoral farmland. Nevertheless, within the wider surrounds of the 20km study radius consistent theoretical visibility begins to become patchy in places as the terrain begins to transition in to a low rolling landscapes comprising of low hills and eskers. This is most evident in the scenic southwest and east/southeast extents of the study area where the Shannon River Corridor towards Lough Derg and the foothills of the Slieve Bloom mountains introduce variety to the landform and influence the degree of visibility. There are pockets of rapidly changing visibility throughout the study area caused by similar landform variability (including Eskers to the north of the site) although not to the same extent as the southern half.

Key receptors contained within the ZTV (i.e with potential visibility) within the central study area include the settlements of Birr (the largest within the study area by some margin). In terms of transport receptors, the to the N62 and N52 national secondary routes and R439, R438, R440, R421, R357, R437, R444, and R356 regional roads. The central study area also contains a network of local roads, rural residential dwellings and farmsteads, all of which will be afforded comprehensive theoretical visibility of the proposed development. Consequently, a strong emphasis will be place on representing these local community receptors in the LVIA.

A relatively large number of settlements are also situated within the wider study area (in addition to Birr) the largest and most notable of which include Ferbane, Kilcormac, Shannonbridge, Banagher, Eyrecourt and Kinnity. Viewpoints will be included from all settlements within the central study area where there is likely visibility of the proposed development, while those in the wider study area may be represented by a nearby view (typically a scenic designation).

The study area is highly variable with regards to scenic amenity, with large swathes of low landscape sensitivity across the central study area, however intersecting these and overlaying the periphery of the study area are areas of medium and high landscape sensitivity, alongside a high density of scenic views. In particular, the wider southern (to the east and west) portions of the study area in both Offaly and Tipperary are of higher scenic amenity and sensitivity as a consequence of the rolling terrain and bordering the natural attractions of the Shannon River, Lough Derg, and Slieve Bloom Mountains. The same landform changes that introduce higher levels of amenity through the southern section of the landscape reflect the degree of visibility through these areas, and aside from upper reaches of hills and ridges, the southern portion of the study here has varied potential for visibility. The northern and north-western quadrants of the study area similarly have a notable degree of scenic amenity due to the numerous river and canal corridors, however there is a more consistent (high) degree of visibility through these areas. Where there is potential for scheme visibility from any of these designated viewpoints, they are to be included as viewpoints within the LVIA chapter. It is important to note that due to the large number of scenic views within the wider study area, one viewpoint may be chosen to represent a cluster of designated views.

The western study area similarly have a notable degree of scenic amenity due to the numerous river and canal corridors, however there is a more consistent (high) degree of visibility through these areas. Where there is potential for scheme visibility from any of these designated viewpoints, they are to be included as viewpoints within the LVIA chapter. It is important to note that due to the large number of scenic views within the wider study area, one viewpoint may be chosen to represent a cluster of designated views.

1.6.2 Viewshed Reference Point (Viewpoint) Selection Report

Based on the ZTV map analysis a preliminary viewpoint selection was generated. These viewpoints are to be investigated during fieldwork and will result in the preparation Viewshed Reference Point Selection Report that will identify viewpoints that are intended to be used for the visual impact assessment and views that were investigated but will be scoped out. Below is a map of the preliminary viewpoints to be investigated;

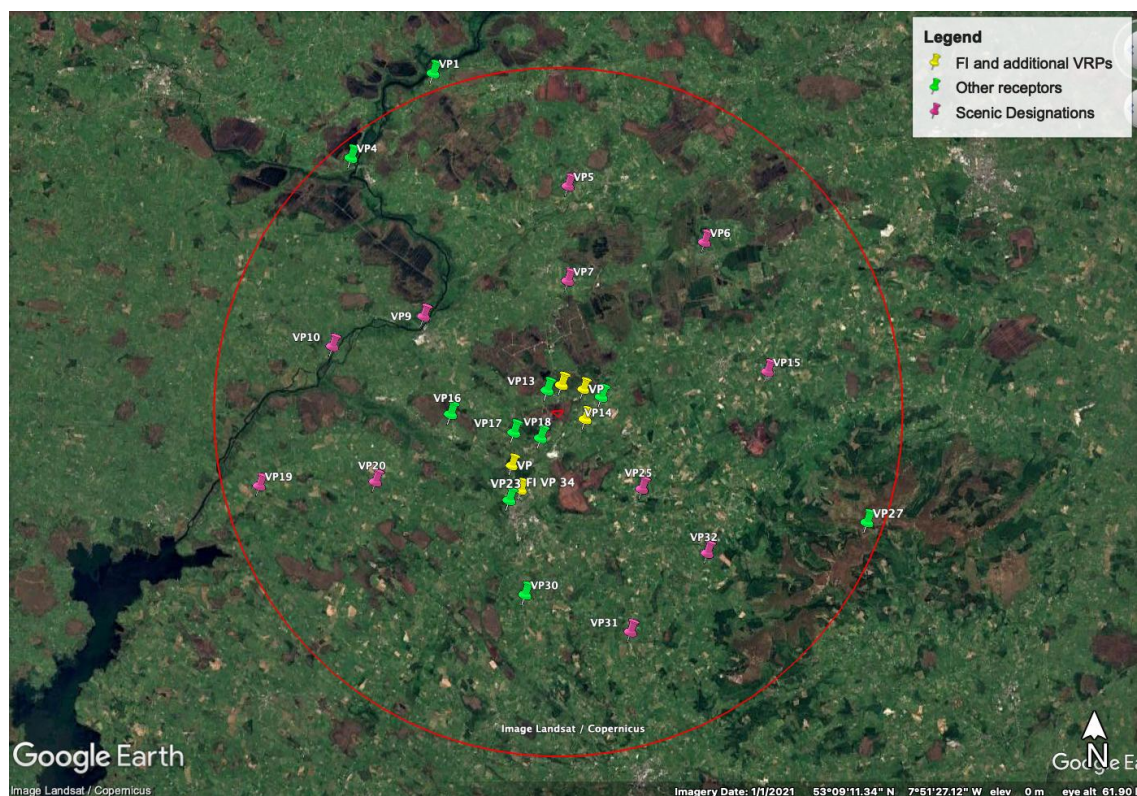


Figure 1.3 Preliminary Viewpoint Map

1.6.3 Scoping Responses from Statutory Consultees

Relevant consultation responses and landscape policy requirements will inform the assessment and viewpoint selection. The EIAR will record how applicable comments have been considered.

1.6.4 Potential Cumulative Impacts

There are 6 other existing or permitted wind farm developments within the central study area or its surrounds. The cumulative impacts of the site will take account of the permitted and existing windfarms in the study area and assess the cumulative impacts of the proposal with the others within the study area. The name, relative distance and number of turbines of these are as follows:

Table 1.1 Cumulative Baseline

Name	Number of turbines	Distance between nearest turbines (to nearest km)
Leabeg Wind Farm	2	11km (NE)
Derrinlough Wind Farm	21	3km (N)
Cloghan Wind Farm	9	4km (N)
Meenwaun Wind Farm	4	2km (NE)
Carrig and Skehanagh	3 & 5	13km (S/SW)
Cush Phase 1	8	0km (W/SW)

1.7 **EIAR ASSESSMENT METHODOLOGY**

Production of the Landscape and Visual Impact Assessment will involve desktop studies and fieldwork comprising professional evaluation by qualified and experienced Landscape Architects.

1.7.1 Assessment

In accordance with the Guidelines for Landscape and Visual Impact Assessment (2013), the method for estimating the significance of landscape impacts and visual impacts is very similar. This is summarised in the diagram below;

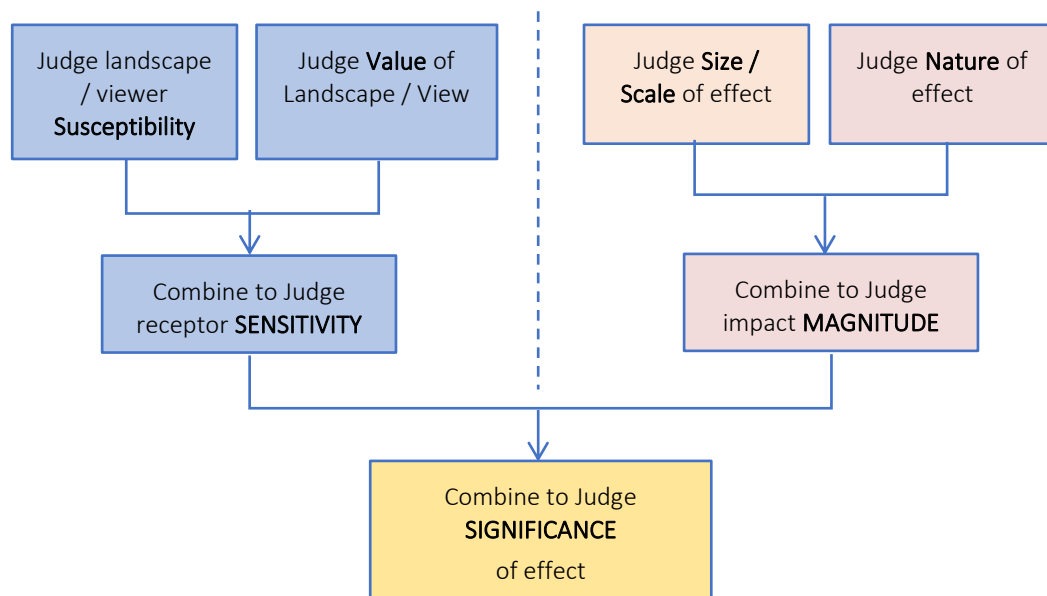


Figure 1.4: Method for assessing Landscape Impact Significance and Visual Impact Significance (based on GLVIA – 2013)

1.7.2 Landscape Impact Assessment Criteria

It is important to assess how the introduction of the proposed Project will affect the physical features and fabric of the landscape, and then how the proposals influence landscape character with reference to published descriptions of character and an understanding of the contemporary character of the landscape as informed through desktop and site studies. When assessing the potential landscape effects of the development, the value and sensitivity of the landscape receptor is weighed against the magnitude of impact to determine the significance of the landscape effect. Criteria outlined below are used to guide these judgements.

1.7.2.1 *Landscape Sensitivity*

The sensitivity of the landscape to change is the degree to which a particular setting can accommodate changes or new elements without unacceptable detrimental effects to its essential characteristics. In accordance with GLVIA3, the sensitivity of a landscape receptor (Landscape Character Area or feature) is derived from combining judgements in relation to its susceptibility to change and its value. The judgement reflects such factors as its quality, value, contribution to landscape character and the degree to which the particular element or characteristic can be replaced or substituted. Landscape Sensitivity is classified using the following criteria set out in Table 1.2.

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level (Area of Outstanding Natural Beauty), where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the landscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where landscape management objectives include, enhancement, repair and restoration.
Negligible	Areas of landscape character that include derelict, mining, industrial land or are part of the urban fringe where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of landscape improvements and/or restoration to realise a higher landscape value.

Table 1.2: Landscape Value and Sensitivity

1.7.2.2 *Magnitude of Change - Landscape*

The magnitude of change is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed Project and to a lesser extent the duration and reversibility of that effect. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the immediate setting that may have an effect on the landscape character. Table 1.3 outlines criteria used to inform this judgement.

Criteria	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an extensive change of the landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to a considerable change of the landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to noticeable changes in landscape character, and quality.

Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements that would lead to discernible changes in landscape character, and quality.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable leading to no material change to landscape character, and quality.

Table 1.3: Magnitude of Change - Landscape

1.7.3 Visual Impact Assessment Criteria

This part of the LVIA provides an assessment of how the introduction of the proposed Project will affect views within the landscape. It therefore needs to consider:

- Direct impacts of the proposed development upon views through intrusion or obstruction;
- The reaction of viewers who may be affected, e.g. residents, walkers, road users; and
- The overall impact on visual amenity.

It has been deemed appropriate to structure the assessment around a series of representative viewpoint locations. All viewpoints are located within the public domain and are representative of views available from main thoroughfares and pedestrian areas within the vicinity of the proposed Project. The selected viewpoints are considered to be comprehensive in communicating the variable nature of the visual effects.

When assessing the potential visual effects of the proposed Project, the sensitivity of the visual receptor is weighed against the magnitude of the visual impact to determine the significance of the visual effect. Criteria outlined below are used to guide these judgements.

1.7.3.1 *Sensitivity of Visual Receptors*

As with landscape sensitivity, the sensitivity of a visual receptor is categorised as Very High, High, Medium, Low, and Negligible. Unlike landscape sensitivity however, the sensitivity of visual receptors has an anthropocentric (human) basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity the viewer is engaged in and whether this heightens their awareness of the surrounding environment.

A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below to establish visual receptor sensitivity at each viewpoint location

1.7.3.2 *Susceptibility of Receptors*

In accordance with GLVIA3, visual receptors most susceptible to changes in views and visual amenity are:

- *"Residents at home;*
- *People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views;*
- *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;*
- *Communities where views contribute to the landscape setting enjoyed by residents in the area; and*
- *Travellers on road, rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened.*

Visual receptors that are less susceptible to changes in views and visual amenity include:

- *People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; and*
- *People at their place of work whose attention may be focussed on their work or activity, not their surroundings, and where the setting is not important to the quality of working life."*

1.7.3.3 Values attached to Views

To assess the amenity value of views, Macro Works use a range of criteria that might typically be related to high amenity value including but not limited to, scenic designations. These are set out below:

- Recognised scenic value of the view (Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Development Plans, for example, a public consultation process is required;
- Views from within highly sensitive landscape areas. These are likely to be in the form of Architectural Conservation Areas, which are incorporated within the Development Plan and therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;
- Primary views from residential receptors. Even within a dynamic city context, views from residential properties are an important consideration in respect of residential amenity;
- Intensity of use, popularity. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at a national or regional scale;
- Provision of vast, elevated panoramic views. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;
- Sense of remoteness and/or tranquillity. Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;
- Degree of perceived naturalness. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;
- Presence of striking or noteworthy features. A view might be strongly valued because it contains a distinctive and memorable landscape / townscape feature such as a cathedral or castle;
- Historical, cultural and / or spiritual significance. Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;
- Rarity or uniqueness of the view. This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;
- Integrity of the landscape character. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;
- Sense of place. This considers whether there is special sense of wholeness and harmony at the viewing location;
- Sense of awe. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be of higher sensitivity, and no relative importance is inferred by the order of listing.

It is recognised that a viewer's interpretation and experience of the landscape can have preferential and subjective components. Where relevant, judgements are made on those elements of the landscape that are considered to contribute more prominently and positively to the visual landscape resource as well as those elements that contribute negatively. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

1.7.3.4 *Magnitude of Change - Visual*

The magnitude of change is again a product of the scale, extent, or degree of change that is likely to be experienced as a result of the proposed Project. This is directly influenced by its 'visual presence / prominence', as experienced by visual receptors in the landscape. These terms are somewhat quantitative in nature, and essentially relate to how noticeable or 'dominant' the proposal is within a particular view. Aside from the obvious influence of scale and distance, a development's visual presence is influenced by the extent and complexity of the view, contextual movement in the landscape, the nature of its backdrop, and its relationship with other focal points or prominent features within the view. It is often, though not always, expressed using one of the following terms: Minimal; Sub-dominant; Co-dominant; Dominant; Highly dominant. Criteria used to inform judgements are provided in Table 1.4.

For wind energy developments, a strong visual presence is not necessarily synonymous with adverse impact, specifically being 'noticed' by viewers and contributing memorably to the experience of that view or location – positively or negatively. Instead, the 2018 Fáilte Ireland survey entitled 'Report on Visitor Awareness and Perceptions of the Irish Landscape' summarised results as below:

- *"The majority of visitors appear not to notice the majority of development – even very large and visually prominent structures such as wind turbines and powerlines*
- *It appears that there are significant divergences between the what can be seen and what is noticed*
- *The majority of visitors expressed very limited desire to change developments that they do notice*
- *The visibility of developments of all types give rise to significantly less adverse effects on the impression of landscape than may often be assumed in the decision-making process*
- *The majority of visible development does not appear to have any adverse effects on the impression of the quality of the landscape"*

With specific regard to wind farms, the following is mentioned within the main report:

"Visibility at Locations: Windfarms or Wind Turbines were visible from four locations, they were mentioned by visitors at one location – Cobh. At this site 11% of visitors mentioned noticing wind energy projects

Visibility en-route to locations: Wind Energy projects were mapped as being visible en-route to six sites, they were mentioned by less than 5% of all visitors."

The purpose here is not to suggest that turbines are unlikely to be noticed, regardless of the visual presence, but rather to highlight that the assessment of visual impact magnitude for wind turbines is more complex than just the degree to which turbines occupy a view. Furthermore, a clear and comprehensive view of a wind farm might be preferable in many instances to a partial, cluttered view of turbine components that are not so noticeable within a view. On the basis of these reasons, the visual amenity aspect of assessing impact magnitude is qualitative and considers such factors as the spatial arrangement of turbines both within the scheme and in relation to surrounding terrain and land cover. It also examines whether the project contributes positively to the existing qualities of the vista or results in distracting visual effects and disharmony.

Criteria	Description
Very High	Complete or very substantial change in view, dominant, involving complete or very substantial obstruction of existing view or complete change in character and composition of baseline, e.g., through removal of key elements.
High	A major change in the view that is highly prominent and has a strong influence on the overall view. This may involve the substantial obstruction of existing views or a complete change in character and composition of baseline, e.g. through removal of key elements or the introduction of new features that would heavily influence key elements.
Medium	Moderate change in view: which may involve partial obstruction of existing view or partial change in character and composition of baseline, i.e., pre-development view through the introduction of new elements or removal of existing elements. Change may be prominent but would not substantially alter scale and character of the surroundings and the wider setting. View character may be partially changed through the introduction of features which, though uncharacteristic, may not necessarily be visually discordant.
Low	Minor change in baseline, i.e. pre-development view - change would be distinguishable from the surroundings whilst composition and character would be similar to the pre change circumstances.
Negligible	Very slight change in baseline, i.e. pre-development view - change would be barely discernible. Composition and character of view substantially unaltered.

Table 1.4: Magnitude of Change - Visual

1.7.4 **Significance of Effect**

The significance of a landscape or visual effect is based on a balance between the sensitivity of the receptor and the magnitude of change, and is categorised as Profound, Substantial, Moderate, Slight, or Imperceptible. Intermediate judgements are also provided to enable an effect to be more accurately described where relevant. 'No Effect' may also be recorded as appropriate where the effect is so negligible it is not noteworthy.

The significance category judgement is arrived at using the Significance Matrix at Table 1.5 as a guide. This applies the principle of significance being a function of magnitude weighed against sensitivity, but employs slightly different terminology that avoids the potentially confusing use of the term 'significant' (as recommended by GLVIA3 Statement of Clarification 1/13 (Landscape institute, 10th June 2013)).

Indicative criteria descriptions used in relation to the significance of effect category are presented at Table 1.6

	Sensitivity of Receptor				
Scale/ Magnitude	Very High	High	Medium	Low	Negligible
Very High	<i>Profound</i>	<i>Profound-substantial</i>	<i>Substantial</i>	<i>Moderate</i>	<i>Slight</i>
High	<i>Profound-substantial</i>	<i>Substantial</i>	<i>Substantial - moderate</i>	<i>Moderate-slight</i>	<i>Slight-imperceptible</i>
Medium	<i>Substantial</i>	<i>Substantial - moderate</i>	<i>Moderate</i>	<i>Slight</i>	<i>Imperceptible</i>
Low	<i>Moderate</i>	<i>Moderate-slight</i>	<i>Slight</i>	<i>Slight-imperceptible</i>	<i>Imperceptible</i>
Negligible	<i>Slight</i>	<i>Slight-imperceptible</i>	<i>Imperceptible</i>	<i>Imperceptible</i>	<i>Imperceptible</i>

Table 1.5: Landscape/Visual Impact Significance Matrix

*Orange shaded cells are considered to equate with 'significant' impacts in EIA terms.

	Landscape	Visual
Profound	There are notable changes in landscape characteristics over an extensive area or a very intensive change over a more limited area.	The view is entirely altered, obscured or affected.
Substantial	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the landscape. There are notable changes in landscape characteristics over a substantial area or an intensive change over a more limited area.	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the visual environment. The proposal affects a large proportion of the overall visual composition, or views are so affected that they form a new element in the physical landscape.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. There are minor changes over some of the area or moderate changes in a localised area.	An effect that alters the character of the visual environment in a manner that is consistent with existing and emerging trends. The proposal affects an appreciable segment of the overall visual composition, or there is an intrusion in the foreground of a view.
Slight	An effect which causes noticeable changes in the character of the landscape without affecting its sensitivities. There are minor changes over a small proportion of the area or moderate changes in a localised area or changes that are reparable over time.	An effect which causes noticeable changes in the character of the visual environment without affecting its sensitivities. The affected view forms only a small element in the overall visual composition or changes the view in a marginal manner.
Imperceptible	An effect capable of measurement but without noticeable consequences. There	An effect capable of measurement but without noticeable

	are no noticeable changes to landscape context, character or features.	consequences. Although the development may be visible, it would be difficult to discern resulting in minimal change to views.
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Table 1.6: Indicative significance of effect criteria description

It is important that the likely effects of the proposals are transparently assessed and understood in order that the determining authority can bring a balanced, well-informed judgement to bear when making a planning decision.

As such, whilst the significance matrix and criteria provide a useful guide, the significance of an effect is ultimately determined by the landscape specialist using professional judgement, and also in the context of occasionally using hybrid judgements to account for nuance.

Effects assessed as ‘Substantial’ or greater (shaded cells) are considered to be the most notable in landscape and visual terms, and may be regarded as ‘Significant’, albeit it is important to note that this is not a reflection on their acceptability in planning terms.

1.7.5 Quality of Effects

In addition to assessing the significance of landscape and visual effects, the quality of the effects is also determined. Within this LVIA, effects are described as negative/adverse, neutral, or positive/beneficial, and the following criteria has been used to guide these judgements.

- Positive/beneficial - A change which improves the quality of the environment, enhancing the existing view/landscape;
- Neutral - No effects or effects that are imperceptible, within normal bounds of variation e.g. will neither detract from nor enhance the existing view/landscape;
- Negative/adverse - A change which reduces the quality of the environment, detracting from the existing view/landscape.

In the case of new energy / infrastructure developments within rural and semi-rural settings, the landscape and visual change brought about by an increased scale and intensity of built form is seldom considered to be positive / beneficial. Effects in these contexts are generally considered to be adverse in nature, or neutral, where the effect has little influence on the landscape/views.

1.8 CONCLUSION

Following the scoping stage desk study, it is considered that the central study area is a working rural landscape that is predominantly contained in large peat bogs and pastoral farmlands. Aside from open views across neighbouring peat bogs, visibility within the study area is generally limited as a consequence of the dense layers of intervening mature tree lines and hedgerows throughout the surrounding landscape combined with the relatively flat nature of the surrounding terrain. The central study area is a robust rural setting that encompasses some sensitive elements including the northern section of the main centre of Birr. Specifically, the town centre and Birr Castle, as well as the main routes (N52, N62) between the site and Birr, and the Birr Golf Club, immediately south of the site.

Notwithstanding, the generally robust landscape character of the site and its immediate surrounds, there is potential for notable visual effects at Local community receptors (local roads and residents) due to the perceived scale of the proposed turbines when viewed from short distances.

Although there is very limited and variable identified scenic amenity within the central study area, the wider study area, most notably to the northeast and the majority of the southern portion, have a high number of scenic designations. There is also potential for visual effects at a number of sensitive heritage and amenity receptors within the wider surrounds of the study area including the Grand Canal situated in the northern half of the study area and Clonmacnoise situated 21km northwest of the site.

There are 6 other existing or permitted wind farm developments within the central study area or its surrounds. The cumulative impacts of the proposed development will take account of the permitted and existing windfarms in the study area.

Aside from Clonmacnoise which is located 21km from the site, and will be included due to historic significance and proximity to the study area (800m), visual impacts at receptors outside of the 20km radius study area are scoped-out of further assessment. This is due to the very limited potential for visibility beyond this distance as well as the fact that if the proposed turbines are viewed from beyond 20km (in the clearest of viewing conditions) they will present at a very small scale with a low degree of contrast against a backdrop of sky. Thus, there is not considered to be potential for significant visual impacts to occur at these increasing distances. For similar reasons, cumulative impacts in relation to receptors (except for Clonmacnoise) or other wind farm developments beyond the 20km radius study area have also been scoped-out of further assessment. Visual effects at receptors that are not contained within the ZTV pattern will also be scoped-out on the basis that there will be no potential for views of the proposed development in such instances.



macroworks

VIEWPOINT SELECTION REPORT

Proposed Cush Wind Farm Phase II

Cush, Co. Offaly.

Prepared by Macro Works Ltd

March 2025



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1. VIEWPOINT SELECTION REPORT

1.1 INTRODUCTION

This report provides a rationale for the selection of viewpoints (VP's) for the proposed Cush Wind Farm Phase II, situated across the townlands of Ballycollin, Whigsborough, Eglish, and Galros East in County Offaly, 6km north of the settlement of Birr. The site 5.5km northeast of the Offaly - Tipperary border, and approximately 9km southeast of the Offaly – Galway border. The periphery of the study area overlays County Roscommon to the north and County Laois to the west.

A typical VP selection is based on computer generated visibility modelling, a desk survey and subsequent field work to establish actual visibility and relative landscape sensitivity at each proposed VP.

In this case, the viewpoints included within the Cush Phase I application and FI response will be used as the baseline for the VP selection. Revisions to this VP selection will be made where required to represent the nearest local receptors and reduce the scope of the assessment in proportion to the smaller scale of development (3T scheme) and slightly revised extent of the 20km radius study area.

1.2 METHODOLOGY

1.2.1 Generation of a Zone of Theoretical Visibility

Gaeltech Ltd. carried out a computer automated study of the zone of theoretical visibility (ZTV). The purpose of this exercise is to identify the 'theoretical' extent and degree of visibility of turbines. This is a theoretical exercise because it is based on topography only at 10m contour intervals and does not allow for intermittent screening provided by, for example, hedgerows, forests or buildings and does not involve the actual height of crests. Thus the ZTV map, assuming no screening, represents a worse than 'worse-case-scenario' with respect to viewing exposure. For the purposes of this project a 20km radius study area was used for the ZTV in accordance with the DOEHLG Wind Energy development Guidelines (2006) for turbines in excess of 100m overall height. However, the study area was further increased to 25km to incorporate features of national or international renown.

1.2.2 Identification of Viewshed Reference Points as a Basis for Assessment

The results of the ZTV analysis provide the basis for selection of key viewpoints from which to study the visual and landscape impact of the proposed wind farm in detail. It is not warranted to include each and every single location that provides a view of the development as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the project. Instead, the assessors endeavoured to select a variety of location types that would provide views of the proposed wind farm from different distances, different angles and different contexts. These locations are significant because they comprise, for example, centres of population and important communication routes whether due to traffic volume or their scenic value. An initial broad set of potential views is generated from a desk study using the ZTV map. Each potential VP is colour coded to identify which of the following receptor types it represents;

- Key Views - from features of international or national importance;
- Amenity Views from important heritage or amenity locations;
- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population; and
- Major Routes.

Some VP's may be applicable to several receptor categories, in which case, they will be assessed under the group that best reflects that location's particular sensitivities.

Fieldwork is then undertaken using the broad set of potential VP's in order to systematically identify those that will actually provide a view of the proposed wind farm and those from which potential views are screened by vegetation or structures. This process involves the use of wireframe images of the proposed turbines within the terrain context of each potential VP location. It is also an opportunity to experience the character and features of each location and make initial value judgements in relation to the sensitivity and therefore the significance of each VP. The actual VP used to carry out the assessment for a given location may not be at the centre of a town or village or fall within a particular designation in a County Development Plan. The VP is used to represent such areas, locations or routes that are close by but which perhaps do not provide as clear a view. Where two or more potential VP's are within close proximity to each other, the most sensitive VP may be selected in lieu of the others to represent the visual impact from that general viewing distance and angle.

1.3 DESIGNATED VIEWS

1.3.1 Offaly County Development Plan 2021 - 2027

The current Offaly County Development Plan includes its range of protected views and prospects in Chapter 4 Biodiversity and Landscape, Figure 4.24. All identified views situated within the 20km study radius are included in Table 1.1 below in addition to their relevance to the proposed development.

Table 1.1 Rational for selection of scenic designations within the Offaly County Development Plan

Offaly CDP ref:	Relevance to visual impact appraisal?	Preliminary VP ref no. included within Cush Phase I report
2	Yes Relevant – Elevated views oriented in the direction of the site. Representative view has been selected.	VP27
3	Yes Relevant – Views oriented in the direction of the site. (One illustrative view has been chosen from this area to represent multiple elevated designated views)	VP1
4	Yes Relevant – Views oriented in the direction of the site. (One illustrative view has been chosen from this area to represent multiple elevated designated views)	VP13
5	Yes Relevant – Scenic view oriented away from the proposed development, however due to proximity, a representative view has been selected.	VP14
6	Not Relevant – Scenic view oriented away from the proposed development.	-
10	Yes Relevant – Views oriented in the direction of the site.	VP5
11	Yes Relevant – Views oriented in the direction of the site.	VP6
12	Yes Relevant – Views oriented in the direction of the site.	VP7
13	Not Relevant - Scenic view oriented in the opposite direction to the proposal and partially screened on ZTV.	-

14	Yes Relevant – Scenic view oriented away from the proposed development, however due to proximity and presence in the periphery of the view, representative view has been selected (representative of length of R440)	VP25
15	Not Relevant - Scenic view oriented in the opposite direction to the proposed development and outside of ZTV. Leap Castle VP selected in close proximity.	VP31
16	Yes Relevant – Views oriented in the direction of the site.	VP32
17	Not Relevant - Scenic views feature a high degree of mature vegetation occurs in the direction of the site. Alternative location chosen in close proximity	VP17
18	Yes Relevant – Views oriented in the direction of the site.	VP32

1.3.2 Roscommon County Development Plan 2022-2028

There is one designated viewpoint within the areas of County Roscommon (Appendix 1, Landscape Character Assessment, Figure 10) that occur within the northwest quadrant of the study area.

Table 1.2 Rational for selection of scenic designations within the Roscommon County Development Plan

Roscom mon CDP ref:	Relevance to visual impact appraisal?	Preliminary VP ref no. included within Cush Phase I report
25	Not Relevant – Scenic view oriented in the opposite direction to the proposed development.	-

1.3.3 Galway County Development Plan 2022-2028

There is one designated viewpoint within the areas of County Galway (Appendix 4, Landscape Character Assessment, Map 8 – View Points) that occur within the southeast quadrant of the study area.

Table 1.3 Rational for selection of scenic designations within the Galway County Development Plan

Galway CDP ref:	Relevance to visual impact appraisal?	Preliminary VP ref no. included within Cush Phase I report
51	Yes Relevant – Views afforded in the direction of the site	VP10
52	Not Relevant - Scenic view oriented in the opposite direction to the proposed development.	-

1.3.4 Tipperary County Development Plan 2022-2028

Volume 3, Appendix 3 of the Draft Tipperary County Development Plan includes a range of preserved views and prospects in County Tipperary. The current labelling of these locations are included as well as their new reference numbers as per the 2022-2028 CDP. All identified views situated within the 20km study radius are included in Table 1.4 below in addition to their relevance to the proposed development.

Table 1.4 Rational for selection of scenic designations within the Tipperary County Development Plan

Tipperary CDP ref:	Relevance to visual impact appraisal?	Preliminary VP ref no. included within Cush Phase I report
52 (Old V09)	Yes Relevant – Views oriented in the direction of the site. (One illustrative view has been chosen from this area to represent multiple elevated designated views)	VP20
30	Not Relevant – Viewpoint located outside of ZTV	-
32	Not Relevant – Scenic view oriented in the opposite direction to the proposed development.	-
39	Not Relevant – Low degree of theoretic turbine visibility and a high degree of mature vegetation in the direction of the site. Views of turbines unlikely.	-
45	Not Relevant – Scenic view oriented in the opposite direction to the proposed development.	-
46	Not Relevant – Viewpoint located outside of ZTV	-

1.3.5 Laois County Development Plan 2021-2027

There is one designated viewpoint within the areas of County Laois that occur within the western periphery of the study area.

Table 1.5 Rational for selection of scenic designations within the Laois County Development Plan

Laois CDP ref:	Relevance to visual impact appraisal?	Preliminary VP ref no. included within Cush Phase I report
7	Not Relevant – Viewpoint located outside of ZTV	-

1.3.6 VP selection by other Agencies

It is a common occurrence that VP locations are suggested or required by Statutory or non-Statutory bodies with stakeholder interest in the site. The most likely source of VP selection input is from the Local Authority that will assess the planning application or surrounding Local Authorities that may be impacted by the proposal. VP locations may also be requested by An Taisce or other tourism, heritage or conservation groups with an interest in the area. If a third-party proposes a VP, it can be evaluated for inclusion. In this case, additional viewpoints which were identified in the FI stage of the Phase I application. These FI receptors and viewpoints will be included within the analysis.

1.4 FINAL VP SELECTION AND USE

The VP's selected at this stage of the project are those from which Macro Works intend to assess the landscape and visual impacts of the proposal within the context of the project EIS. Notwithstanding, this VP selection report is intended as a discussion document and VP locations may be added to or removed from this set in consultation with the Planning Authority.

Table 1 provides the grid coordinate location of the selected VP's for the Cush Wind Farm Phase II. A viewpoint map is also provided at Figure 1.1 below. The panoramic photographs (included in Appendix 1) represent each of the selected VP locations and can be used in conjunction with the grid reference coordinates by the Visualisation Specialist to find the precise location of the VP and to capture their own images required for photomontages.

Note: An increase/decrease in the total number of viewpoints selected for the LVIA chapter is possible as the scoping process progresses.

Figure 1.1 Preliminary Viewpoint Selection

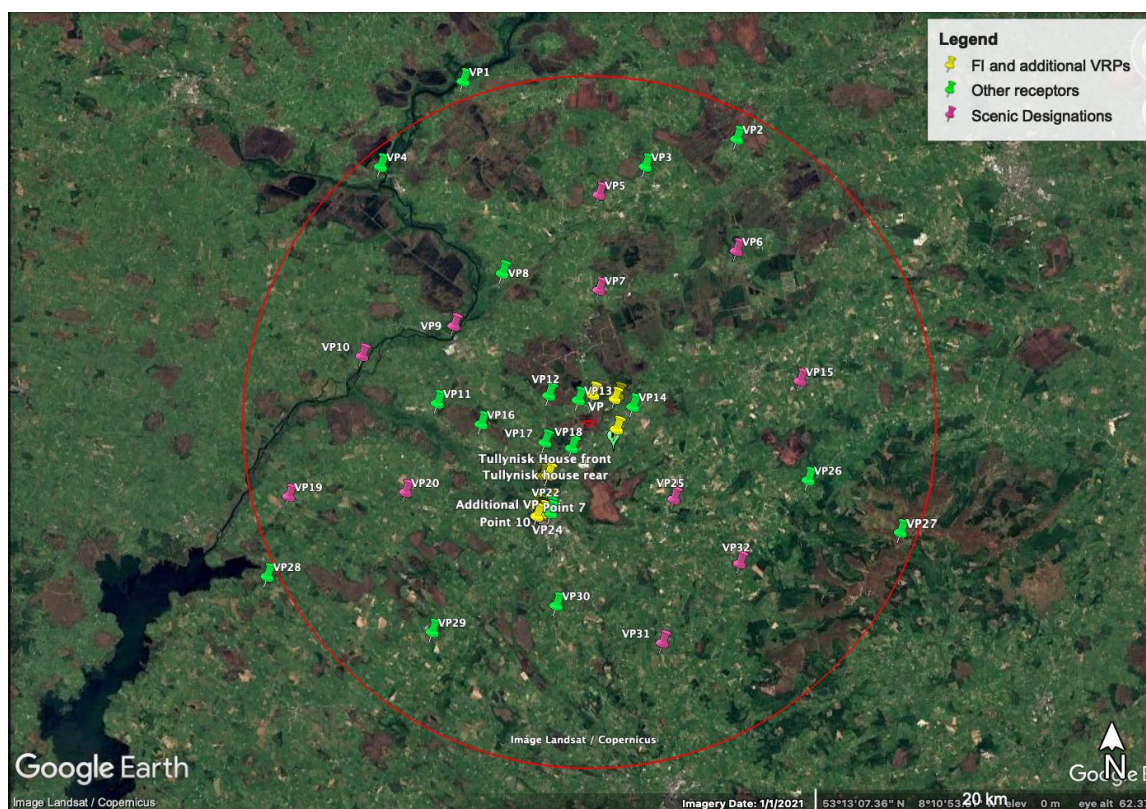


Table 1.6 Outline Description of Selected Viewpoints used in Cush Wind Farm (Phase I)

VP No.	Location	Initial selection criteria (Desk Study)	National Grid Coordinates (Eastings and Northings)	Direction of View
VP1	Clonmacnoise	Amenity and heritage feature Designated scenic view	600949.951, 730360.636	SE
VP4	Shannonbridge	Designated scenic view	596098.434, 725338.296	SE

VP5	Moyclare	Designated scenic view	608942.985, 723689.856	S
VP6	Lough Boora	Designated scenic view	616030.75, 720227.817	SW
VP7	Stonestown	Designated scenic view	609569.589, 718456.726	S
VP8	Taylor's Cross	Designated scenic view	603279.119, 712807.805	SE
VP10	Meelick Quay	Designated scenic view Amenity and heritage feature	595088.676, 714231.121	E
VP13	N62 at Galros Cross Roads	Major route Local community views	607761.28, 711640.138	S
VP14	Fivealley	Major Route Local community views	610960.86, 711270.456	W
VP15	Local Road at Knockhill and Drinagh	Designated scenic view Local community views	620644.118, 712999.267	W
VP16	R438 at Deerpark	Local community views	602027.576, 710163.515	E
VP17	Local Road at Birr Golf Club	Local community views	606150.839, 708992.759	N
VP18	N62 at Cooleeny	Major route	607390.731, 708958.336	N
VP19	R489 at Lisinisky	Designated scenic view	590738.906, 705950.311	NE
VP20	R489 at Pike	Designated scenic view	597619.204, 706217.317	NE
VP23	'The Leviathan' telescope within Birr Castle and Demesne	Amenity and heritage feature.	605531.895, 705165.53	N/NE
VP25	R440 at Ballygowan	Designated scenic view	613346.844, 705841.703	NW
VP27	R440 at Slieve Blooms	Designated scenic view	626433.93, 704201.237	W/NW
VP30	N62 at Rathbeg Lane	Major Route	606479.231, 699642.956	N
VP31	Local Road at Leap Castle	Amenity and heritage feature	612670.538, 697432.965	N/NW
VP32	Local Road at Clonlee	Designated scenic view	617217.839, 702061.497	NW

Table 1.7 Outline Description of Rejected Viewpoints

VP No.	Location	Direction of potential view	Initial selection criteria (Desk Study)	Rejection Rationale (From Phase I & Fieldwork)
VP2	Offaly Way Start Point	SW	Amenity feature	Limited visibility, peripheral to study area.
VP3	N62 at Ferbane	S	Centre of population	Represented by VP15, focus of scenic view not towards site, VP15 closer and clearer view, along same major route.
VP8	Shannon Harbour	SE	Amenity and heritage feature	Limited visibility, receptor represented by VP9 & VP10
VP11	L3006 at Garbally	E	Local community views	Lower sensitivity receptor selected at Phase I to represent nearest local community – replaced by new VP closer to proposed development
VP12	L3006 at Ballyslavin	E	Local community views	Lower sensitivity receptor selected at Phase I to represent nearest local community – replaced by new VP closer to proposed development
VP21	Walled Garden within Birr Castle and Demesne	NE	Amenity and heritage feature	Limited visibility, receptor represented by VP23
VP22	N52 at Birr	N/NE	Centre of population Amenity and heritage feature	Additional VPs requested at FI stage, therefore the clearest of the FI views is used in lieu of VP22.
VP24	St Johns Hall, William Parsons, 3rd Earl of Rosse Statue, R440	N	Centre of population, Major Route, Amenity and heritage feature	Limited visibility, represented by other Birr VPs
VP28	R493 at Carrigahorig	E/NE	Designated scenic view	Outside of study area
VP29	N52 at Hazelfort	N	Major Route	Limited visibility, peripheral to study area.
FI VP33	N52 at Birr	N	Centre of population, Major Route	Receptor represented by FI VP34 which features more open visibility
FI VP35	N52 at Birr	N	Centre of population, Major Route, Amenity and heritage feature	Receptor represented by FI VP34 which features more open visibility

FI VP36	N52 at Birr	N	Centre of population, Major Route, Amenity and heritage feature	Receptor represented by FI VP34 which features more open visibility
FI VP37	Birr Castle	N	Amenity and heritage feature	Excluded due depicted visibility shown on FI montage which excludes eastern extent of scheme
RZTV Point 1	Formal Gardens, Box Hedges – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 2	River Garden, Brick Bridge – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 3	Spring Wildflower Meadow (north) – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 4	Lakeside at Spring Wildflower Meadow – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 5	The Leviathan of Parsonstown – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 6	Lawn in front of moat – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 7	Rosse Observatory – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 8	New Pavilion – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 9	Corner of moat, front lawn of castle – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility
RZTV Point 10	Front terrace of castle – Birr Castle	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows limited theoretical visibility
RZTV Point 11	Front of Whigsborough House	S	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility. VP to be included along nearby local road to represent residences, road users and heritage setting.

RZTV Point 12	Front of Tullynisk House	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows no theoretical visibility. Heritage surrounds will be represented by new VP along R439.
RZTV Point 13	Rear of of Tullynisk House	N	Amenity and heritage feature	Reverse ZTV included in Phase I FI response shows limited visibility. Heritage surrounds will be represented by new VP along R439.

Table 1.8 Outline Description of Additional Viewpoints

VP No.	Location	Direction of potential view	Initial selection criteria (Desk Study)	Addition Rationale (From Fieldwork)
Local Community View 1	L1092 at Whigsborough	S	Local community views.	Additional view to represent nearest receptors and local community views
Heritage View 1	L1092 near Whigsborough House	SW	Amenity and heritage feature, Local community views,	Included to address heritage concerns raised in FI during Phase I application
Local Community View 2	N52 at Shanacloon	NW	Main route, Local community views	Additional view to represent nearest receptors and local community views
Heritage View 2	R439 near Tullynisk House	NE	Main route, Amenity and heritage feature, Local community views,	Included to address heritage concerns raised in FI during Phase I application
FI View 34 (Phase I)	N52 north of Birr	N	Major route, Centre of population	Requested in FI during Phase I application – clearest available view along N52 in Birr built up surrounds.

These viewpoints are re-ordered and compiled into the following list:

Table 1.9 Outline Description of Selected Viewpoints

VP No. **	Location	Initial selection criteria (Desk Study)	National Grid	Direction of View
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			Coordinates (Eastings Northings)	ITM and	
VP1		Clonmacnoise Amenity and heritage feature Designated scenic view	600949.951, 730360.636		SE
VP2 (Old VP4)		Shannonbridge Designated scenic view	596098.434, 725338.296		SE
VP3 (Old VP5)		Moyclare Designated scenic view	608942.985, 723689.856		S
VP4 (Old VP6)		Lough Boora Designated scenic view	616030.75, 720227.817		SW
VP5 (Old VP7)		Stonestown Designated scenic view	609569.589, 718456.726		S
VP6 (Old VP8)		Taylor's Cross Designated scenic view	603279.119, 712807.805		SE
VP7 (Old VP10)		Meelick Quay Designated scenic view Amenity and heritage feature	595088.676, 714231.121		E
VP8 (Old Local Community VP1)		L1092 at Whigsborough Local community views	608605.88 711959.149		N/NE
VP9 (Heritage View 1)		L1092 near Whigsborough House Amenity and heritage feature, Local community views,	609915.106, 711767.986		SW
VP10 (Old VP13)		N62 at Galros Cross Roads Major route Local community views	607761.28, 711640.138		S
VP11 (Old VP14)		Fivealley Major Route Local community views	610960.86, 711270.456		W
VP12 (Old VP15)		Local Road at Knockhill and Drinagh Designated scenic view Local community views	620644.118, 712999.267		W
VP13 (Old Local Community VP2)		N52 at Shanacloon Main route, Local community views	610005.6, 709942.416		N/NE
VP14 (Old VP16)		R438 at Deerpark Local community views	602027.576, 710163.515		E
VP15 (Old VP17)		Local Road at Birr Golf Club Local community views	606150.839, 708992.759		N
VP16 (Old VP18)		N62 at Cooleeny Major route	607390.731, 708958.336		N
VP17 (Old VP19)		R489 at Lisinisky Designated scenic view	590738.906, 705950.311		NE
VP18 (Old VP20)		R489 at Pike Designated scenic view	597619.204, 706217.317		NE

VP19 (Old Heritage View 2)	R439 near Tullynisk House	Main route, Amenity and heritage feature, Local community views,	605699.953 707258.567	
VP20 (Old FI View 34)	N52 north of Birr	Major route, Centre of population	606241, 705824	N
VP21 (Old VP23)	'The Leviathan' telescope within Birr Castle and Demesne	Amenity and heritage feature.	605531.895, 705165.53	N/NE
VP22 (Old VP25)	R440 at Ballygowan	Designated scenic view	613346.844, 705841.703	NW
VP23 (Old VP27)	R440 at Slieve Blooms	Designated scenic view	626433.93, 704201.237	W/NW
VP24 (Old VP30)	N62 at Rathbeg Lane	Major Route	606479.231, 699642.956	N
VP25 (Old VP31)	Local Road at Leap Castle	Amenity and heritage feature	612670.538, 697432.965	N/NW
VP26 (Old VP32)	Local Road at Clonlee	Designated scenic view	617217.839, 702061.497	NW

** Viewpoint numbers are presented "VP 'New Number' (Old VP 'Old Number')"

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ANNEX 4 – HERITAGE SCOPING REPORT



ARCHAEOLOGICAL, ARCHITECTURAL AND
CULTURAL HERITAGE SCOPING REPORT

CUSH WIND FARM PHASE II AND GRID CONNECTION,
COUNTY OFFALY

PREPARED BY
HORIZON ARCHAEOLOGY

FOR
CUSH WIND LTD.

30th APRIL 2026

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1 INTRODUCTION

1.1 General

This scoping report has been prepared on behalf of Cush Wind Ltd. by Horizon Archaeology to assess and define any effects which the construction, operation and decommissioning of a 3 no. wind turbine extension (Turbines 9 – 11) to the permitted Cush Wind Farm (Cush Wind Farm Phase I), as well as the construction and operation of a 110kV electricity substation (buildings and compound), temporary construction compound, and associated underground electricity line to facilitate the connection of the wind farm to the national electricity network, may have on the archaeological, architectural and cultural heritage resource (figures 1 - 2). The scoping report includes an identification of potential impacts or effects which may arise and outlines mitigation measures, based on current information, which may be used to avoid, reduce or offset any potential adverse impacts or effects.

1.2 Objectives of Scoping Report

The key objectives of this scoping report are to assess, as far as is reasonably possible from existing records and current information, any effects the project may have on the archaeological, architectural and cultural heritage resource. The following key issues are addressed:

- Direct and indirect effects of the construction of the project on the archaeological, architectural and cultural heritage resource;
- Direct and indirect effects of the operation of the project on the archaeological, architectural and cultural heritage resource;
- Cumulative effects of the construction and operation of the project on the archaeological, architectural and cultural heritage resource with other existing, permitted or proposed developments or projects; and
- Direct and indirect effects of the decommissioning of the project on the archaeological, architectural and cultural heritage resource.

1.3 Project Team

Dermot Nelis BA ArchOxon AIFA MIAI

Dermot Nelis graduated from Queen's University Belfast, and after gaining extensive fieldwork experience undertook postgraduate studies at the University of Oxford in archaeological consultancy and project management.

Dermot has acted as Senior Archaeologist on several road schemes for various County Councils, and Directed large-scale multi-period excavations associated with those developments. He has completed over 180 Licensed fieldwork programmes and more than 250 archaeological, architectural and cultural heritage desk-based reports and Environmental Impact Assessment Report chapters.

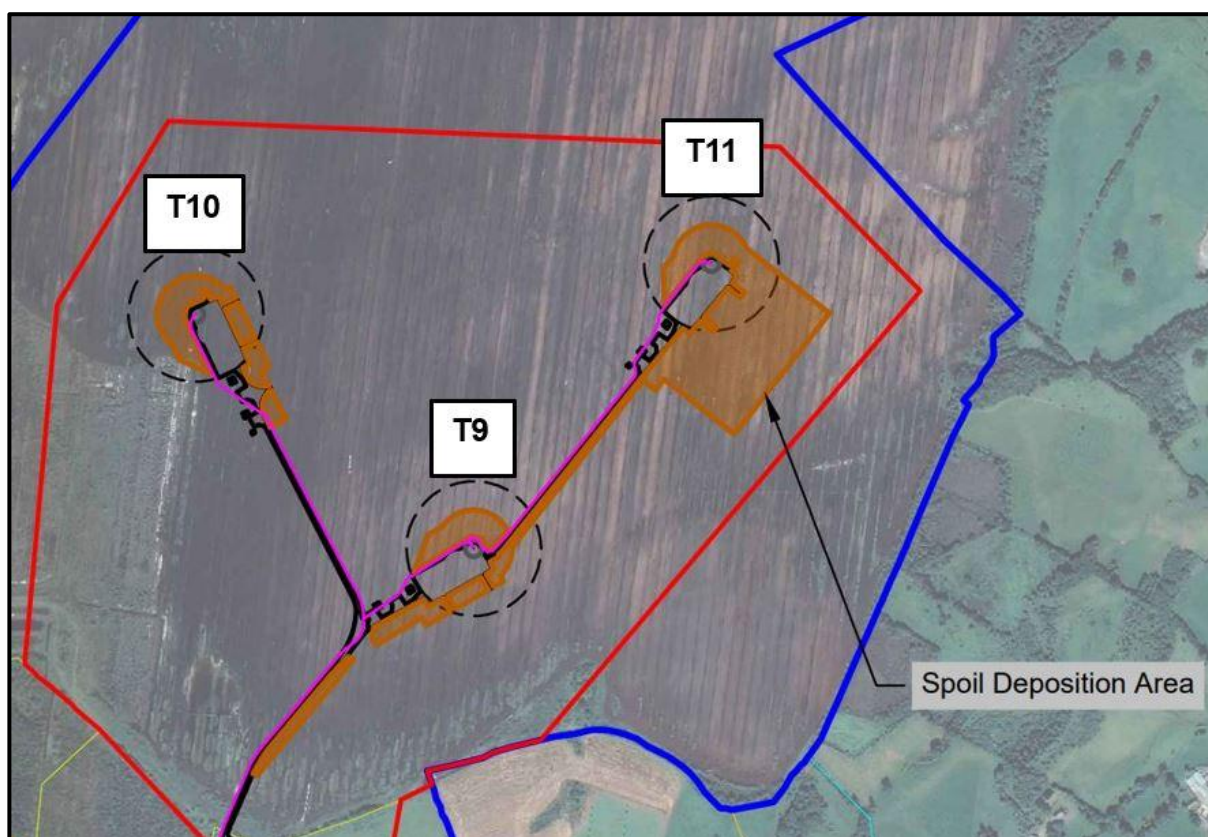


Figure 1: Aerial photograph showing location of Turbines 9 – 11, spoil deposition areas and access tracks



Figure 2: Aerial photograph showing the electricity substation and underground electricity line

2 METHODOLOGY

2.1 Study Area

There is no professional standard for defining the extent of a study area when assessing the likelihood of effects on archaeological, architectural or cultural heritage remains. A 1km study area has been applied around the wind farm site and electricity substation to assess the presence of statutorily protected archaeological remains (RMP sites).

A 20km study area has been applied around the project site to assess the presence of any World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List.

A 5km study area has been applied around the wind farm site to assess the presence of any National Monuments, sites with Preservation Orders or Temporary Preservation Orders, Sites recorded on the Register of Historic Monuments, Protected Structures, Conservation Areas or Proposed Conservation Areas or structures recorded on the National Inventory of Architectural Heritage.

A 2km study area has been applied around the electricity substation to assess the presence of any National Monuments, sites with Preservation Orders or Temporary Preservation Orders, Sites recorded on the Register of Historic Monuments, Protected Structures, Conservation Areas or Proposed Conservation Areas or structures recorded on the National Inventory of Architectural Heritage.

A 100m study area has been applied around the underground electricity line to assess the presence of National Monuments, sites with Preservation Orders or Temporary Preservation Orders, Sites recorded on the Register of Historic Monuments, Protected Structures, Conservation Areas or Proposed Conservation Areas or structures recorded on the National Inventory of Architectural Heritage.

An assessment has been made of any historic gardens or designed landscapes as recorded on the National Inventory of Architectural Heritage that may exist within the project site.

2.2 Data Sources

The following sources were examined and a list of sites and areas of archaeological, architectural and cultural heritage potential was compiled:

- Record of Monuments and Places of County Offaly and County Tipperary;
- Cartographic and documentary sources relating to the study area;
- Aerial photographs of Ordnance Survey Ireland and Bing aerial photography;
- Offaly County Development Plan (2021 – 2027) and Tipperary County Development Plan (2022 - 2028); and
- National Inventory of Archaeological Heritage.

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Service. Back-up files of the Sites and Monuments Record (SMR) provide details of documentary sources and field inspections where these have taken place.

Cartographic sources are important in tracing land-use development within an area of land take, as well as providing important topographical information on sites and areas of

archaeological potential. Cartographic analysis of relevant maps has been made to identify any topographical anomalies that may no longer remain within the landscape. **Documentary sources** were consulted to gain background information on the historical and archaeological landscape of the development area.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its potential to contain previously unidentified archaeological remains.

Offaly County Development Plan (2021 – 2027) and **Tipperary County Development Plan** (2022 - 2028) contain Objectives and Policies on the preservation and management of archaeological, architectural and cultural heritage features.

National Inventory of Architectural Heritage (NIAH) is a section within the Department of Housing, Local Government and Heritage. The work of NIAH involves identifying, recording and evaluating on a non-statutory basis the architectural heritage of Ireland from 1700 to the present day.

3 BASELINE CONDITIONS

3.1 Site-Specific Archaeological Background

There are no Recorded Monuments within the project site.

There are four Recorded Monuments within 1km of the wind farm site (figure 3):

RMP OF030-080: Road- class 3 togher

The site (width 0.92m; depth 0.13m) is composed of parallel pieces of brushwood, flanked on either side by two heavy roundwoods, all orientated east/west, evident in a single drain. A single worked piece of brushwood was recorded.

RMP OF030-081: Structure- peatland

A roundwood (diameter 0.09m) located in a drain face with evidence of wood working. It was set within moderately humified Sphagnum peat with ericaceous remains immediately above the peat. It is noted (www.archaeology.ie) that *“the evidence is not sufficient to warrant its acceptance as the remains of an archaeological monument”*.

RMP OF030-082: Structure- peatland

An isolated post (length 0.43m; diameter 0.06m) situated in a drain face 0.63m below the field surface and set at a 60° angle. The wood was in good condition with surviving bark and had been worked to a wedge point with a metal tool. The piece is within moderately humified Sphagnum peat. It is noted (www.archaeology.ie) that *“the evidence is not sufficient to warrant its acceptance as the remains of an archaeological monument”*.

RMP OF030-083: Structure- peatland

A single piece of roundwood (diameter 0.06m) located 0.57m below the field surface in a drain face and set at a 35° angle. It is within moderately humified Sphagnum peat which contained ericaceous remains and Eriophorum. It is noted (www.archaeology.ie) that *“the evidence is not sufficient to warrant its acceptance as the remains of an archaeological monument”*.

There are no additional Recorded Monuments within 1km of the wind farm site.

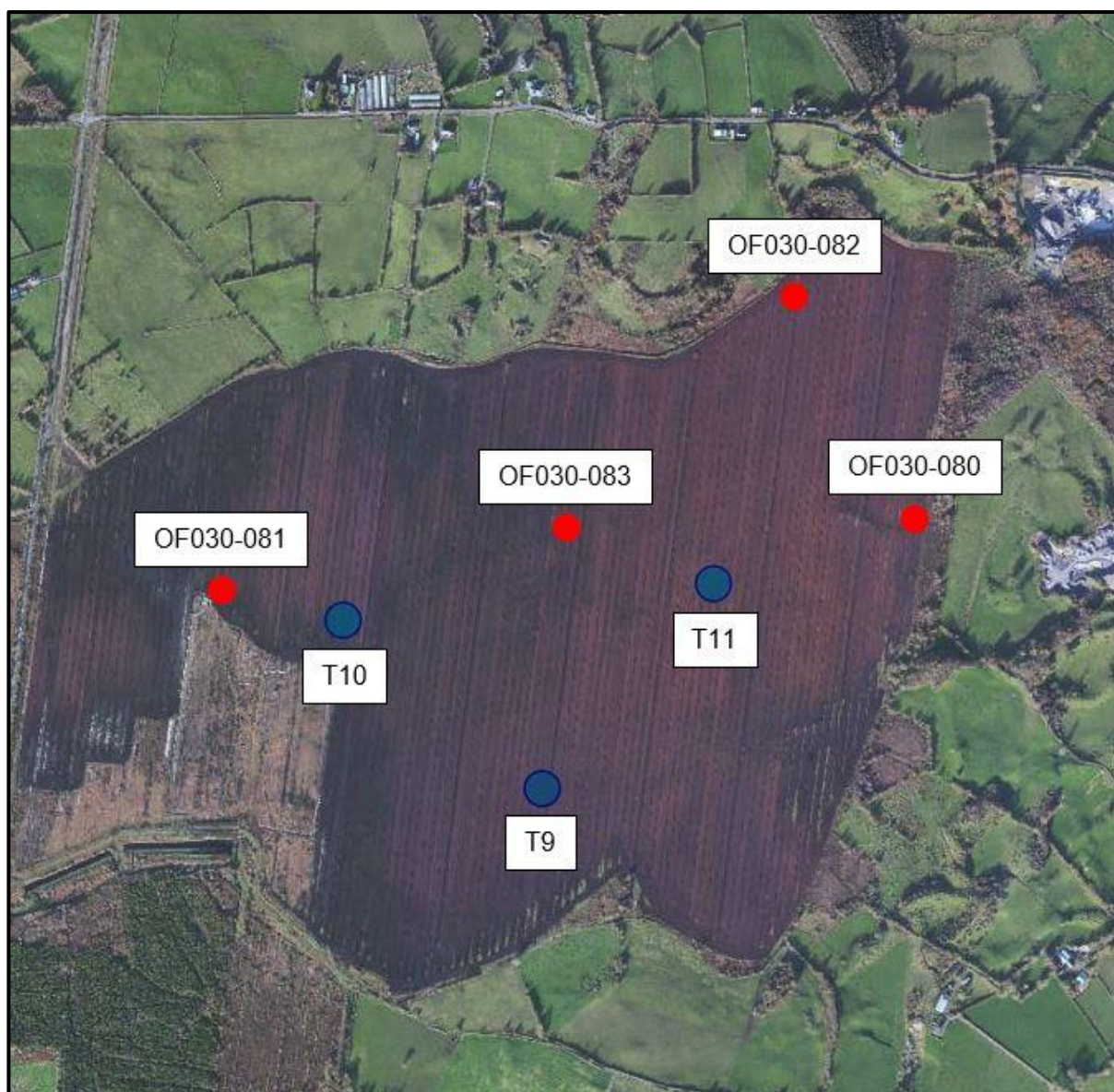


Figure 3: Recorded Monuments within 1km of the wind farm site

There are two Recorded Monuments within 1km of the electricity substation (figure 4):

RMP OF030-014: Mound

Situated on top of a low natural rise in undulating countryside. A circular earthen mound (height 2m; diameter at top 6.3m) enclosed by wide flat-bottomed ditch (width 4.2m; external diameter 1m) which has been altered on all sides. There is no evidence of an external bank which may have been destroyed when the inner ditch was being altered. It is known locally as “*The Dean’s Fort*”, and is a natural mound which may have been used as a burial place.

RMP OF035-001: Ringfort

A natural hill with no archaeological features visible. The site is known locally as “The *Deans Fort*”, and is marked on the First Edition of the Ordnance survey map (1840).

There are no additional Recorded Monuments within 1km of the electricity substation.

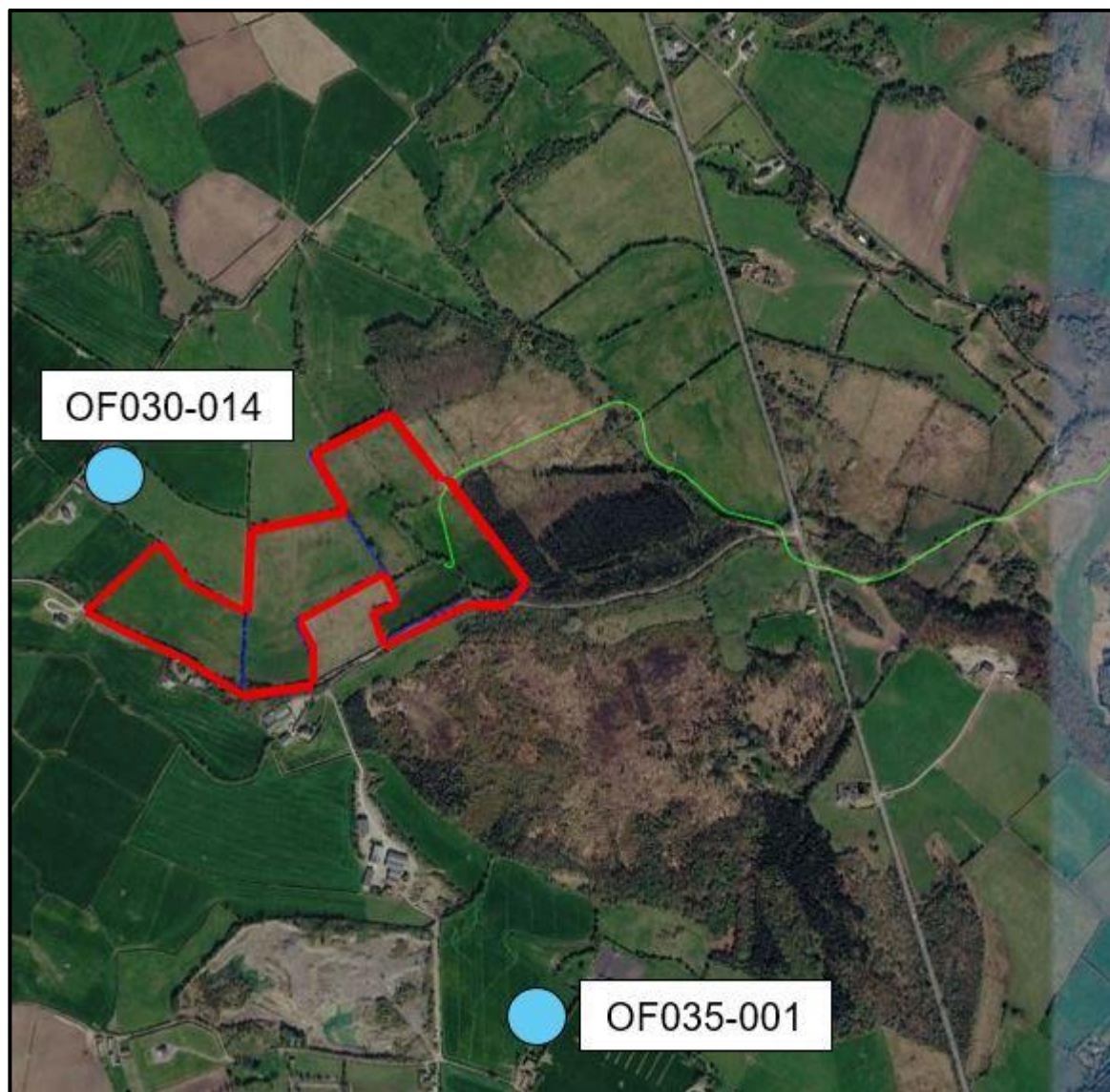


Figure 4: Recorded Monuments within 1km of the electricity substation

There are no Recorded Monuments within 100m either side of the underground electricity line.

Class 3 toghers are short stretches of peatland trackway, constructed of wood, up to 15m in length with a discernible orientation. It may not be possible to trace them beyond a single

sighting. They have evidence of deliberate structure and are interpreted as having been laid down to cross a small area of bog. They may date from the Neolithic to the Medieval period.

Peatland structures are wood found in peat, which has been deliberately deposited or processed. They vary from single pieces to deposits without a clear form or orientation but which are indicative of an archaeological structure. They may be of any date from the Neolithic to the Medieval period.

Mounds are artificial earth or earth and stone constructions of unknown date, the function of which cannot be classified as any other known archaeological monument type on present evidence (www.archaeology.ie).

Ringforts are generally circular defensive enclosures which were constructed to protect farmsteads. They were enclosed by an earthen bank and exterior ditch, and ranged from approximately 25m to 50m in diameter. The smaller sized and single banked type (univallate) was more than likely home to lower ranks of society, while larger examples with more than one bank (bivallate/trivallate) housed the more powerful kings and lords. They are regarded as defended family homesteads, and the extant dating evidence suggests they were primarily built between the 7th and 9th centuries AD (Stout 1997, 22-31). The most recent detailed study (*ibid.*, 53) has suggested that there is an approximate total of 45,119 potential ringforts or enclosure sites throughout Ireland.

3.2 Cartographic Analysis

Ordnance Survey Maps: First Edition 1:10,560 (1840); First Edition 1:2,500 (1910) and Third Edition 1:10,560 (1912)

The underground electricity line will cross a number of townland, parish and barony boundaries. The electricity substation will truncate a townland and parish boundary. The access road from Turbine 9 to Turbine 11 will cross a townland boundary, while Turbine 10 will be located on a townland boundary. Research suggests that:

“hoards and single finds of Bronze Age weapons, shields, horns, cauldrons and gold personal objects can all be shown to occur on boundaries.” (Kelly 2006, 28).

Turbine 11 will be located approximately 250m - 300m west of Loughs Bornagh as recorded on historic cartographic sources. Turbines 9 - 11 will all be located on unenclosed rough pasture as recorded on the First Edition 1:10,560 map (1840).

There are no archaeological or architectural features recorded within the wind farm site on historic cartographic sources.

The historic maps all record the presence of small vernacular structures, an Ordnance Survey bench mark and a possible limekiln in the general vicinity of the underground electricity line.

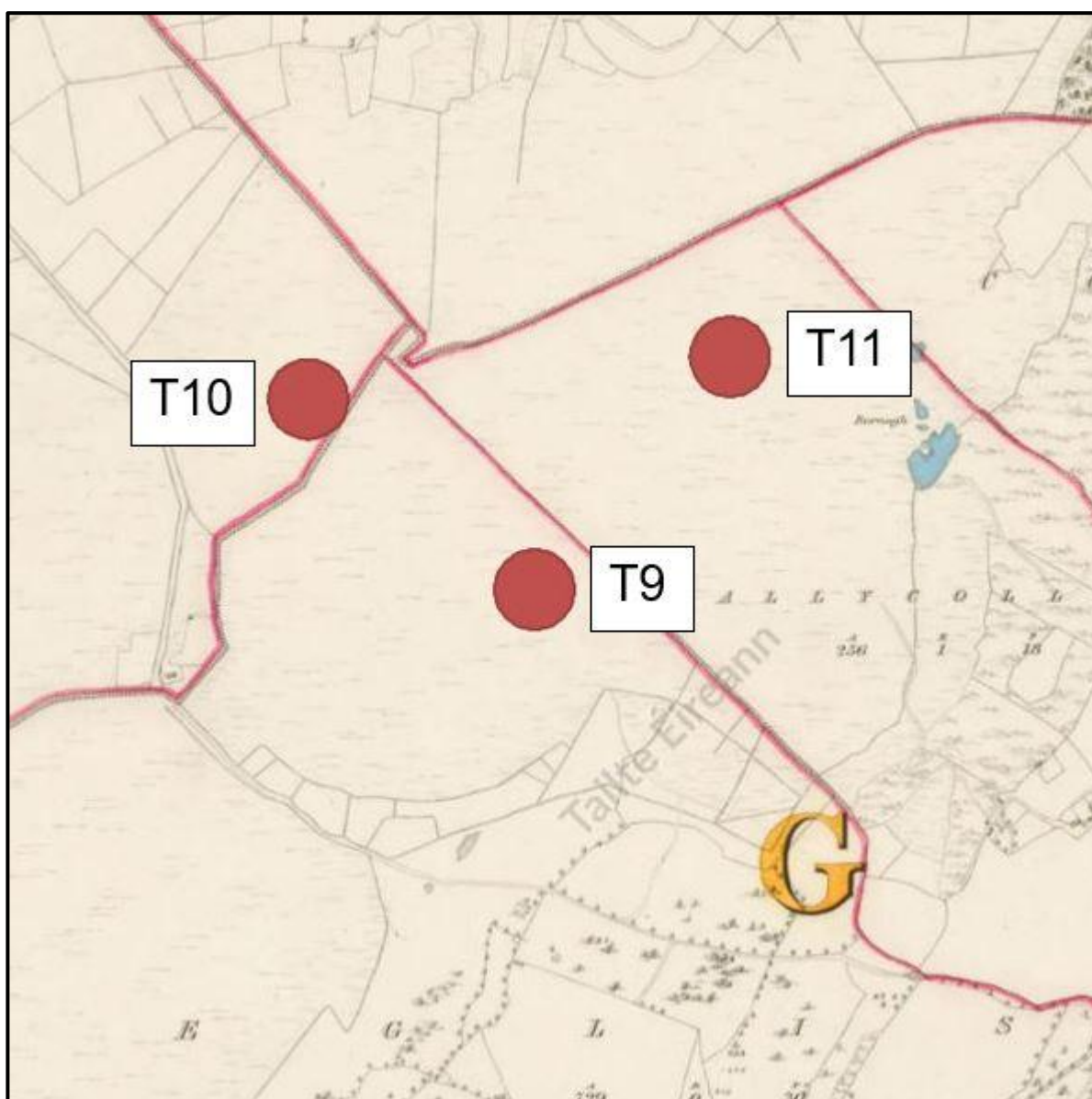


Figure 5: Extract from First Edition 1:10,560 Ordnance Survey map showing location of Turbines 9 – 11

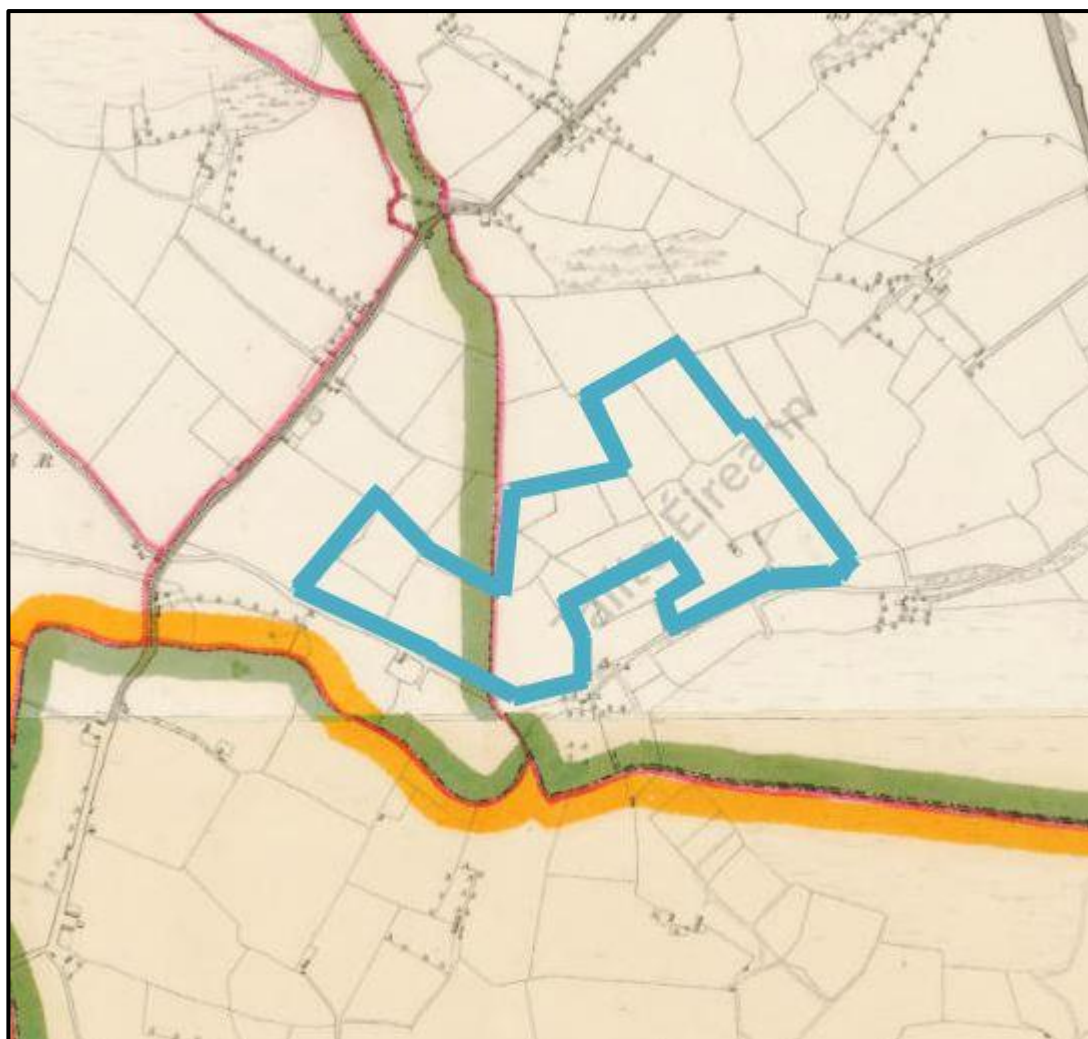


Figure 6: Extract from First Edition 1:10,560 Ordnance Survey map showing location of the electricity substation

3.3 Aerial Photographs

Aerial photographs held by Ordnance Survey Ireland (www.map.geohive.ie) and Bing aerial photography (www.bing.com/maps) were consulted to look for the presence of archaeological or architectural remains within the project site.

There was no evidence of any archaeological or architectural features recorded on aerial photography within the project site.

3.4 County Development Plans

Offaly County Development Plan 2021 - 2027

3.4.1 Archaeological Heritage

It is a Policy (BHP-33) of Offaly County Council to:

“support and promote the protection and appropriate management and sympathetic enhancement of the county’s archaeological heritage within the Plan area, in particular by implementing the Planning and Development Act 2000 (as amended) and the National Monuments Act 1930 (as amended).” (Offaly County Council 2021, 334).

It is an Objective (BHO-05) of Offaly County Council to:

“to protect archaeological sites and monuments, and archaeological objects, which are listed in the Record of Monuments and Places, and to seek their preservation in situ (or at a minimum, preservation by record) through the planning process.” (*ibid.*, 337).

Table 10.1 of the Offaly County Development Plan (*ibid.*, 325) contains a list of *National Monuments in State Ownership in County Offaly*. There are no National Monuments in State Ownership recorded in the Offaly County Development Plan within the wind farm site or within 5km of the wind farm site. There are no National Monuments in State Ownership recorded in the Offaly County Development Plan within the electricity substation or within 2km of the electricity substation. There are no National Monuments in State Ownership recorded in the Offaly County Development Plan within the underground electricity line or within 100m either side of the underground electricity line.

Table 10.2 of the Offaly County Development Plan (*ibid.*, 325 - 326) contains a list of *National Monuments in Guardianship of the State in County Offaly*. There are no National Monuments in Guardianship of the State recorded in the Offaly County Development Plan within the wind farm site or within 5km of the wind farm site. There are no National Monuments in Guardianship of the State recorded in the Offaly County Development Plan within the electricity substation or within 2km of the electricity substation. There are no National Monuments in Guardianship of the State recorded in the Offaly County Development Plan within the underground electricity line or within 100m either side of the underground electricity line.

Table 10.3 of the Offaly County Development Plan (*ibid.*, 326) contains a list of *Monuments Protected by Preservation Order in County Offaly*. There are no Monuments Protected by Preservation Order recorded in the Offaly County Development Plan within the wind farm site or within 5km of the wind farm site. There are no Monuments Protected by Preservation Order recorded in the Offaly County Development Plan within the electricity substation or within 2km of the electricity substation. There are no Monuments Protected by Preservation Order

recorded in the Offaly County Development Plan within the underground electricity line or within 100m either side of the underground electricity line.

The Offaly County Development Plan (*ibid.*, 327) contains a list of *Zones of Archaeological Potential* within the county. There are no Zones of Archaeological Potential recorded in the Offaly County Development Plan within the wind farm site or within 5km of the wind farm site. There are no Zones of Archaeological Potential recorded in the Offaly County Development Plan within the electricity substation or within 2km of the electricity substation. There are no Zones of Archaeological Potential recorded in the Offaly County Development Plan within the underground electricity line or within 100m either side of the underground electricity line.

There are 23 recorded Early Medieval monasteries in County Offaly. Conservation Management Plans have been prepared for Clonmacnoise, Leamanaghan, Durrow, Rahan and Killeigh (*ibid.*, 327), none of which are within the project site or within 5km of the project site.

3.4.2 Architectural Heritage

It is a Policy (BHP-01) of Offaly County Council to:

“ensure the protection, sympathetic and sensitive modification, alteration, extension or reuse of protected structures or parts of protected structures, and the immediate surrounds included and proposed for inclusion in the Record of Protected Structures that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, together with the integrity of their character and setting.” (*ibid.*, 331).

It is an Objective (BHO-01) of Offaly County Council to:

“review the Record of Protected Structures on an on-going basis and make additions, deletions and corrections as appropriate over the period of this Plan.” (*ibid.*, 337).

The Offaly County Development Plan contains the *Record of Protected Structures* for the county. There are no Protected Structures recorded in the Offaly County Development Plan within the windfarm site or within 1km of the windfarm site. There are 15 Protected Structures recorded in the Offaly County Development Plan within 5km of the wind farm site.

There are no Protected Structures recorded in the Offaly County Development Plan within the electricity substation. There are four Protected Structures recorded in the Offaly County Development Plan within 2km of the electricity substation.

There are no Protected Structures recorded in the Offaly County Development Plan within the underground electricity line or within 100m either side of the underground electricity line.

There are no Architectural Conservation Areas recorded in the Offaly County Development Plan (*ibid.*, 320) within the wind farm site or within 5km of the wind farm site. There are no Architectural Conservation Areas recorded in the Offaly County Development Plan within the electricity substation or within 2km of the electricity substation. There are no Architectural Conservation Areas recorded in the Offaly County Development Plan within the underground electricity line or within 100m either side of the underground electricity line.

3.4.3 Cultural Heritage

There are no designated Cultural Heritage features recorded in the Offaly County Development Plan within the project site or within 5km of the project site.

Tipperary County Development Plan 2022 - 2028

Part of the electricity substation 2km study area extends into County Tipperary, and as such the Tipperary County Development Plan has been assessed to look for the presence of archaeological, architectural or cultural heritage features within the 2km study area.

3.4.4 Archaeological Heritage

There are no designated Archaeological Heritage features recorded in the Tipperary County Development Plan within the electricity substation or within 2km of the electricity substation.

3.4.5 Architectural Heritage

There are no Protected Structures recorded in the Tipperary County Development Plan within the electricity substation. There are two Protected Structures recorded in the Tipperary County Development Plan within 2km of the electricity substation (one of which is recorded as a Protected Structure in the Offaly County Development Plan).

There are no Architectural Conservation Areas recorded in the Tipperary County Development Plan within the electricity substation or within 2km of the electricity substation.

3.4.6 Cultural Heritage

There are no designated Cultural Heritage features recorded in the Tipperary County Development Plan within the electricity substation or within 2km of the electricity substation.

3.5 National Monuments

The Department of Housing, Local Government and Heritage maintains a database on a county basis of National Monuments in State Care: Ownership and Guardianship. The term National Monument is defined in Section 2 of the National Monuments Act (1930) as:

“a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto.” (www.archaeology.ie).

There are no National Monuments in State Care within the wind farm site or within 5km of the wind farm site. There are no National Monuments in State Care within the electricity substation or within 2km of the electricity substation. There are no National Monuments in State Care within the underground electricity line or within 100m either side of the underground electricity line.

The Department of Housing, Local Government and Heritage maintains a database on a county basis of National Monuments with Preservation Orders or Temporary Preservation Orders.

There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the wind farm site or within 5km of the wind farm site. There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the electricity substation or within 2km of the electricity substation. There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the underground electricity line or within 100m either side of the underground electricity line.

The Department of Housing, Local Government and Heritage maintains a Register of Historic Monuments on a county basis.

There are no Registered Historic Monuments within the wind farm site. There are two Registered Historic Monuments within 5km of the wind farm site. There are no Registered Historic Monuments within the electricity substation. There is one Registered Historic Monument within 2km of the electricity substation. There are no Registered Historic Monuments

within the underground electricity line or within 100m either side of the underground electricity line.

A 20km study area has been applied around the project site to assess the presence of any World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List. There are no World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List within the project site. There is one site included in the Tentative List as consideration for nomination to the World Heritage List within 20km of the project site. Birr Observatory is located approximately 3.9km south east of the electricity substation and approximately 6.4km south west of the nearest turbine (Turbine 9).

3.6 National Inventory of Architectural Heritage

Building Survey

The National Inventory of Architectural Heritage (NIAH) maintains a non-statutory register of buildings, structures *etc.* recorded on a county basis.

There are no structures recorded on the National Inventory of Architectural Heritage within the wind farm site or within 1km of the wind farm site. There are 13 structures recorded on the National Inventory of Architectural Heritage within 5km of the wind farm site. There are no structures recorded on the National Inventory of Architectural Heritage within the electricity substation. There are six structures recorded on the National Inventory of Architectural Heritage within 2km of the electricity substation (one of which is the same structure recorded twice). There are no structures recorded on the National Inventory of Architectural Heritage within the underground electricity line or within 100m either side of the underground electricity line.

Garden Survey

There are no historic gardens or designed landscapes recorded on the National Inventory of Architectural Heritage within the project site.

3.7 Electricity Substation Geophysical Survey

A geophysical survey (Detection Licence 25R0486) was carried out within the footprint of the electricity substation in December 2025 (Nichols 2025). The survey was undertaken to locate and identify any potential archaeological responses within the development area. The geophysical survey report noted that no responses of definite archaeological character were recorded. The survey data are dominated by anomalies associated with patterns of recent land-

use and modern disturbance, probable former boundaries, cultivation, and multiple responses indicative of recent forestry/tree plantation. While no features of probable archaeological potential were identified, several anomalies were suggested as being suitable for archaeological test trenching.

A report describing the results of the geophysical survey has been submitted to National Monuments Service.

3.8 Electricity Substation Test Trenching

Test trenching within the footprint of the electricity substation was carried out under Licence to National Monuments Service (Licence Number 26E0148) in March 2006 (Sawicki 2006). One feature of possible archaeological significance (a possible kiln) was recorded within the electricity substation redline boundary but outside all areas requiring groundworks. The possible archaeological feature has been fully preserved *in situ*.

A report describing the results of the test trenching will be submitted to National Monuments Service.

3.9 Wind Farm Site Wetland Walkover Survey

A peatland walkover survey was carried out over the wind farm site in April 2026 (Moore 2026). The field inspection of Galros Bog identified one possible archaeological site, and it lies outside the area subject to planning and will therefore not be directly affected by construction of the wind turbines. The bog may contain further archaeological sites, not visible at the time of inspection, at lower levels than those currently exposed or within sub-peat strata. The eastern part of the bog, close to Turbine No. 11, may be particularly sensitive.

A report describing the results of the walkover survey will be submitted to National Monuments Service.

3.10 Conclusions

There are no Recorded Monuments within the project site. There are four Recorded Monuments within 1km of the wind farm site. There are two Recorded Monuments within 1km of the electricity substation. There are no Recorded Monuments within 100m either side of the underground electricity line. There are no National Monuments in State Care within the wind farm site or within 5km of the wind farm site. There are no National Monuments in State Care within the electricity substation or within 2km of the electricity substation. There are no National

Monuments in State Care within the underground electricity line or within 100m either side of the underground electricity line. There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the wind farm site or within 5km of the wind farm site. There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the electricity substation or within 2km of the electricity substation. There are no National Monuments with Preservation Orders or Temporary Preservation Orders within the underground electricity line or within 100m either side of the underground electricity line. There are no Registered Historic Monuments within the wind farm site. There are two Registered Historic Monuments within 5km of the wind farm site. There are no Registered Historic Monuments within the electricity substation. There is one Registered Historic Monument within 2km of the electricity substation. There are no Registered Historic Monuments within the underground electricity line or within 100m either side of the underground electricity line. There are no Zones of Archaeological Potential within the wind farm site or within 5km of the wind farm site. There are no Zones of Archaeological Potential within the electricity substation or within 2km of the electricity substation. There are no Zones of Archaeological Potential within the underground electricity line or within 100m either side of the underground electricity line. There are no World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List within the project site. There is one site (Birr Observatory) included in the Tentative List as consideration for nomination to the World Heritage List within 20km of the project site.

There are no Protected Structures within the wind farm site or within 1km of the wind farm site. There are 15 Protected Structures within 5km of the wind farm site. There are no Protected Structures within the electricity substation. There are six Protected Structures within 2km of the electricity substation (one of which is the same structure recorded twice). There are no Protected Structures within the underground electricity line or within 100m either side of the underground electricity line. There are no Architectural Conservation Areas within the wind farm site or within 5km of the wind farm site. There are no Architectural Conservation Areas within the electricity substation or within 2km of the electricity substation. There are no Architectural Conservation Areas within the underground electricity line or within 100m either side of the underground electricity line. There are no designated Cultural Heritage features recorded in the Offaly County Development Plan within the project site or within 5km of the project site. There are no structures recorded on the National Inventory of Architectural Heritage within the wind farm site or within 1km of the wind farm site. There are 13 structures recorded on the National Inventory of Architectural Heritage within 5km of the wind farm site. There are no structures recorded on the National Inventory of Architectural Heritage within the electricity substation.

There are six structures recorded on the National Inventory of Architectural Heritage within 2km of the electricity substation (one of which is the same structure recorded twice). There are no structures recorded on the National Inventory of Architectural Heritage within the underground electricity line or within 100m either side of the underground electricity line. There are no historic gardens or designed landscapes recorded on the National Inventory of Architectural Heritage within the project site.

The underground electricity line will cross a number of townland, parish and barony boundaries. The electricity substation will truncate a townland and parish boundary. The access road from Turbine 9 to Turbine 11 will cross a townland boundary, while Turbine 10 will be located on a townland boundary. The historic maps all record the presence of small vernacular structures, an Ordnance Survey bench mark and a possible limekiln in the general vicinity of the underground electricity line. There was no evidence of any archaeological or architectural features recorded on aerial photography within any areas of land take required for the proposed development.

A geophysical survey was carried out within the footprint of the electricity substation in December 2025. While no features of probable archaeological potential were identified, several anomalies were suggested as being suitable for archaeological test trenching. Test trenching within the footprint of the electricity substation was carried out in March 2006. One feature of possible archaeological significance (a possible kiln) was recorded within the electricity substation redline boundary but outside all areas requiring groundworks. The possible archaeological feature has been fully preserved *in situ*. A peatland walkover survey was carried out over the wind farm site in April 2026. The field inspection identified one possible previously unrecorded archaeological site which lies outside the proposed development area.

4 ASSESSMENT OF POTENTIAL CONSTRUCTION IMPACTS

4.1 Potential Construction Impacts

As a result of carrying out this scoping report, the following potential archaeological, architectural and cultural heritage impacts have been identified and thus require detailed assessment, where relevant:

- There are no Recorded Monuments or any additional statutorily protected archaeological features within the project site. As a result, there will be no direct construction impact on any previously recorded archaeological remains.

- There are four Recorded Monuments within 1km of the wind farm site. There are two Recorded Monuments within 1km of the electricity substation. Test trenching revealed one possible previously unrecorded archaeological feature within the electricity substation redline boundary but outside all areas requiring groundworks. A peatland walkover survey identified one possible previously unrecorded archaeological site which lies outside the proposed development area.
- The proposed development could potentially have a permanent imperceptible direct construction impact on any previously unrecorded archaeological remains that may exist within the development area.
- There are no World Heritage Sites or sites included in the Tentative List as consideration for nomination to the World Heritage List within the project site. There is one site included in the Tentative List as consideration for nomination to the World Heritage List within 20km of the project site. There will be no direct construction impact on the one site included in the Tentative List as consideration for nomination to the World Heritage List.
- There are two Registered Historic Monuments within 5km of the wind farm site. There is one Registered Historic Monument within 2km of the electricity substation. There will be no direct construction impact on any Registered Historic Monuments.
- There are no Protected Structures or any additional statutorily protected architectural heritage features within the project site. As a result, there will be no direct construction impact on any statutorily protected architectural heritage features.
- There are 15 Protected Structures within 5km of the wind farm site. There are six Protected Structures within 2km of the electricity substation (one of which is the same structure recorded twice). There will be no direct construction impact on any Protected Structures.
- There are 13 structures recorded on the National Inventory of Architectural Heritage within 5km of the wind farm site. There are six structures recorded on the National Inventory of Architectural Heritage within 2km of the electricity substation (one of which is the same structure recorded twice). There will be no direct construction impact on any structures recorded on the National Inventory of Architectural Heritage.

- It is considered at this stage that there is unlikely to be a visual or noise construction impact on any archaeological, architectural or cultural heritage remains, however, further assessment is required.

4.2 Potential Cumulative Construction Impacts

- It is not known at this stage if there will be any cumulative construction impacts on archaeological, architectural or cultural heritage remains between the proposed development and any existing, permitted or proposed developments. Further assessment is required.

5 ASSESSMENT OF POTENTIAL OPERATIONAL IMPACTS

5.1 Potential Operational Impacts

- It is considered the proposed wind farm may have an operational visual impact on four Recorded Monuments located within the 1km study area. Further assessment is required.
- It is considered the proposed electricity substation may have an operational visual impact on two Recorded Monuments located within the 1km study area. Further assessment is required.
- It is not known at this stage if there will be an operational visual impact on Birr Observatory, which is included in the Tentative List as consideration for nomination to the World Heritage List. Further assessment is required.
- It is not known at this stage if there will be an operational visual impact on two Registered Historic Monuments within 5km of the wind farm site and one Registered Historic Monument within 2km of the electricity substation. Further assessment is required.
- It is considered the proposed wind farm may have an operational visual impact on 15 Protected Structures within 5km of the wind farm site. Further assessment is required.
- It is considered the proposed electricity substation may have an operational visual impact on six Protected Structures within 2km of the electricity substation (one of which is the same structure recorded twice). Further assessment is required.

- It is considered the proposed wind farm may have an operational visual impact on 13 structures recorded on the National Inventory of Architectural Heritage within 5km of the wind farm site. Further assessment is required.
- It is considered the proposed electricity substation may have an operational visual impact on six structures recorded on the National Inventory of Architectural Heritage within 2km of the electricity substation (one of which is the same structure recorded twice). Further assessment is required.
- It is considered that the proposed electricity line, due to its underground nature, does not have the potential to result in operational visual impacts on archaeological, architectural or cultural heritage remains.

5.2 Potential Cumulative Operational Impacts

- It is not known at this stage if there will be any cumulative operational impacts on archaeological, architectural or cultural heritage remains between the proposed development and any existing, permitted or proposed developments. Further assessment is required.
- It is considered that the underground electricity line will not have any cumulative operational impacts on archaeological, architectural or cultural heritage remains.

5.3 Potential Decommissioning Impacts

It is considered at this stage that there is unlikely to be any decommissioning impacts on any archaeological, architectural or cultural heritage remains, however, further assessment is required.

6 PROPOSED ASSESSMENT & MITIGATION MEASURES

- It is recommended that a detailed desktop analysis and appraisal of the existing cultural heritage environment be undertaken as part of the Environmental Impact Assessment Report (EIAR). This appraisal will allow for an evidence-based assessment of likely significant effects which may arise resulting from the construction, operation and decommissioning of the proposed development.

- It is recommended that detailed visual impact assessments be carried out to assess the extent of operational visual impacts the proposed development may have on archaeological and architectural remains.
- It is likely that Licensed archaeological test trenching will be recommended at all wind farm hardstand locations and turbine bases.
- It is likely that Licensed archaeological monitoring will be recommended for all excavation works associated with construction of the wind farm.
- It is likely that Licensed archaeological monitoring will be recommended for all excavation works associated with construction of the electricity substation.
- It is likely that Licensed archaeological monitoring will be recommended for all excavation works associated with construction of the underground grid connection.
- On the basis of the above scoping assessment it is assessed that no heritage elements can be “scoped out”, and thus a detailed impact assessment of the archaeological, architectural and cultural heritage resource must be provided within the EIAR.

7 MICROSITING

There are no Recorded Monuments or any additional statutorily protected archaeological, architectural or cultural heritage features within any areas of land take required for the proposed development. As such, it is considered that micrositeing would not have an impact on the archaeological, architectural or cultural heritage resource.

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