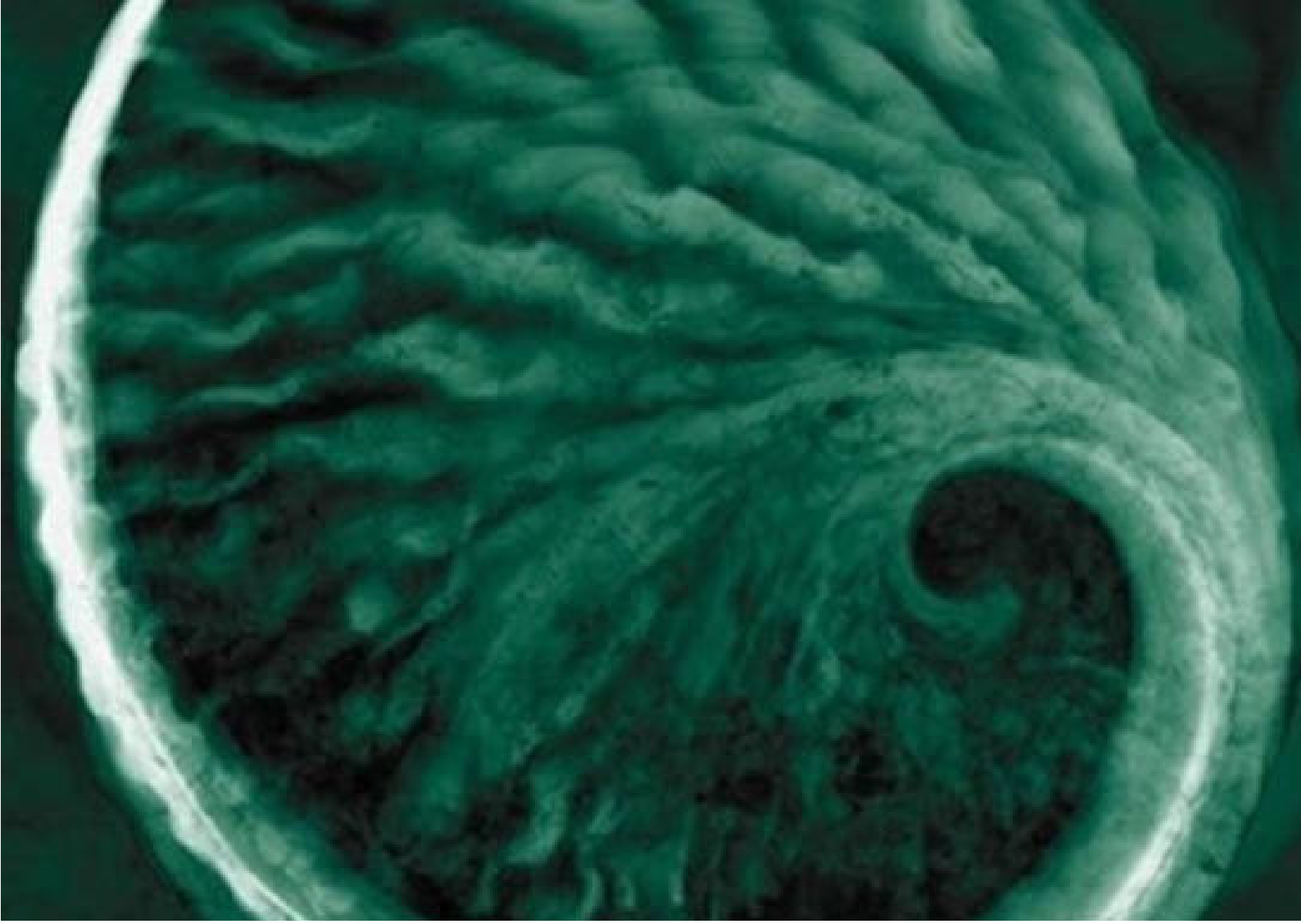

Owenreagh/Craignagapple Wind Farm

Ørsted Onshore Ireland Midco Limited

Environmental Statement- Technical Appendix A2.1 Scoping Request

06 September 2023

Project No.: 0696177

Signature Page

06 September 2023

Owenreagh/Craignagapple Wind Farm

Environmental Statement- Technical Appendix A2.1 Scoping Request

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ARCUS

OWENREAGH I REPOWER AND CRAIGNAGAPPLE MODIFICATION AND EXTENSION

SCOPING REQUEST

JULY 2021

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1 INTRODUCTION

This report constitutes a request for a Scoping Opinion for the proposed Owenreagh I Repower and Craignagapple Modification and Extension (the Development) located approximately 5 kilometres (km) east of Strabane, in County Tyrone (the Site). The location of the Development is shown in Figure 1.1: Site Location Plan in Appendix B of this Scoping Report. This Scoping Report has been prepared by Arcus Consultancy Services Ltd. (Arcus) with input from independent specialists, on behalf of Ørsted Onshore Ireland Midco Limited, hereafter referred to as 'the Applicant'.

The Applicant intends to submit an application for planning permission for the Development to the Department for Infrastructure (DfI) for consent under Planning Act (Northern Ireland) 2011[1] with accompanying Environmental Impact Assessment (EIA) under The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017[2] ('the EIA Regulations') for the construction and operation of a wind farm. The findings of the EIA will be presented within an Environmental Statement (ES) which will accompany the planning application.

The aim of the Scoping process is to identify key environmental issues at an early stage, to help determine which elements of the proposal are likely to cause significant environmental effects, and identify issues that can be 'scoped out' of the assessment. This Scoping Report has been prepared to provide structure for consultation on the EIA approach and the work required for preparation of the EIA. Comments are invited from consultees and any other interested parties.

1.1 The Applicant

Ørsted Onshore Ireland Midco Limited is a fully owned subsidiary of Ørsted. Formerly Brookfield Renewable Ireland (BRI), Ørsted completed the acquisition of a 100 % equity interest in Brookfield Renewable's onshore wind business in Ireland and the UK, on 9th June 2021. This acquisition marked Ørsted's entry into the European onshore market. Ørsted develops, constructs, and operates offshore and onshore wind farms, solar farms, energy storage facilities, and bioenergy plants, and provides energy products to its customers.

Ørsted ranks as the world's most sustainable energy company in Corporate Knights' 2021 index of the Global 100 most sustainable corporations in the world and is recognised on the CDP Climate Change A List as a global leader on climate action. With headquarters in Denmark, Ørsted employs more than 6,000 people around the world.

Across the island of Ireland, Ørsted owns and operates a portfolio of onshore wind farms with a combined capacity of more than 300 megawatts (MW) including the Owenreagh I and Owenreagh II Wind Farms located at the Site.

1.2 The Development

The Development would involve the construction and operation of a wind farm anticipated to be a minimum of 50 MW, ranging up to 77 MW, on an area where there are already wind farms operational and consented. The Development will include:

- Erection of approximately up to 15 wind turbines with a maximum blade tip height of 180 metres (m);
- Substation compound including control building and other electrical infrastructure;
- Upgrade of existing site access tracks and construction of new access tracks;

[1] UK Government (2011). *The Planning Act Northern Ireland 2011.* Available at: https://www.legislation.gov.uk/nia/2011/25/contents (Accessed 14/06/2021)

[2] UK Government (2017). *The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017.* Available at: https://www.legislation.gov.uk/nisr/2017/83/made (Accessed 14/06/2021)

- Crane hardstandings;
- Permanent met mast;
- Borrow pit(s);
- Construction compound(s);
- Onsite power collection system (turbine transformers and underground cables); and
- Decommissioning of the operational Owenreagh I Wind Farm and site restoration.

Given the iterative nature of the EIA process, the final layout of the Development is still being refined. The Development is therefore being scoped on a preliminary turbine layout which would represent the likely geographical spread of turbine and infrastructure across the Site. The results of the Scoping process will feed into the iterative design of the Development.

The connection to the National Grid is not covered within this consenting process and will be subject to a separate consent application.

1.3 Environmental Impact Assessment and Scoping

The Development is expected to exceed 30 MW and the EIA will be undertaken in accordance with The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 referred to as the EIA Regulations which came into effect on 16th May 2017.

Under Schedule 2 of the EIA Regulations, the Development falls under subsection 3(j):

"Installations for the harnessing of wind power for energy production (wind farms)', where: (i) the development involves the installation of more than 2 turbines; or

(ii) the hub height of any turbine or height of any other structure exceeds 15 metres."

In line with EIA Regulations, the Applicant recognises the Development is an 'EIA Development' following consideration of the characteristics of the Development, the location of the Site and the characteristics of the potential impacts as outlined within Schedule 3 of the EIA Regulations.

1.3.1 Scoping Report

In line with the EIA Regulations, the Applicant is seeking to confirm the scope of the required assessment which is to be provided in the ES i.e., a "Scoping Opinion". To aid this process, this Scoping Report includes the following:

- A description of the location of the Development including figures identifying the Site and the parameters of development;
- Figures identifying the designated and sensitive environmental receptors surrounding the Site; and
- A brief description of the nature and purpose of the Development and its potential resultant effects.

This document has considered the different aspects of the environment likely to be significantly affected by the Development and has identified those topics which require consideration as part of the EIA, with a view to inviting comments on the approach to the EIA and the content of the ES.

1.3.2 Consultation

Consultation forms an integral part of the EIA process and will be undertaken throughout the EIA.

This has already begun with a Section 26 Determination Submission made to DfI on 29th April 2021 and a subsequent Section 26 Determination Notice issued by DfI on 13th May 2021 confirming that any planning application for the Development should be made to DfI Planning. As such, in addition to this Scoping Report, a Pre-Application Discussion (PAD)

submission has been made to DfI to inform pre-application consultations with DfI and statutory consultees. Any pre-application consultations will be given cognisance when further defining the scope of the assessment.

Consultation of specific technical issues will also be undertaken where appropriate as part of the EIA process. A list of consultees which have been provided with this Scoping Report is contained in Appendix A.

Subject to agreement with Derry City and Strabane District Council (the Council), it is intended that the Council is briefed on the Development in tandem with the scheduled Pre-Application Community Consultation (PACC) Events.

1.3.2.1 Pre-application Community Consultation

Due to the Development timescales and current COVID-19 restrictions[3], initial virtual PACC events will be held with details of how to join the online events provided via

- Public newspaper notices in the Strabane Chronicle and the Strabane Weekly News;
- Project leaflets/ Consultation Event Invites issued to the dwellings/ businesses located within 3 km of the Site;
- A dedicated project website (www.Craignagapplewindfarm.com); and
- Event posters in the local area including:
    - Artigarvan;
    - Ballymagorry;
    - Donemana;
    - Altishane;
    - Aghabrack;
    - Cloghcor; and
    - Donagheady.

Following these initial events it is hoped that two 'in-person' events will be held in November 2021 at the Fir Trees Hotel, Strabane, BT82 9EA.

Project information will also be available from the Community Liaison Officer (CLO) for the Development. Assisted by the CLO the project team will be available to deal with queries from local community stakeholders throughout the PACC phase of the EIA process.

[3] Department of Health (2021) *The Health Protection (Coronavirus, Restrictions) Regulations (Northern Ireland) 2021* Available at: https://www.health-ni.gov.uk/publications/health-protection-coronavirus-restrictions-regulations-northern-ireland-2021 (Accessed 17/06/21)

2 THE DEVELOPMENT

The Development involves the decommissioning of the operational Owenreagh I Wind Farm (Planning Ref: J/93/0286) and repowering of the same with up to two turbines of up to approximately 180 m tip height and rotor diameter of up to approximately 136 m. The Development also includes the modification of the planning for the consented Craignagapple Wind Farm (Planning Ref: J/2010/0481/F) to increase the tip height from 111 m to up to 180 m (rotor diameter of up to 136 m) and increase the number of turbines from 6 up to 13, by extending the currently consented site to the north, east and west.

The decommissioning of the operational Owenreagh I Wind Farm and the construction of the Development is likely to occur partly in tandem and would have a greater effect than if the two processes were to arise at different times. This represents a worst-case environmental assessment scenario than compared to the decommissioning of the existing wind turbines alone, should this be required.

The ancillary infrastructure will likely include, but is not limited to; hardstanding areas, transformers, access tracks, cabling and cable trenches, a substation, temporary construction compound(s), borrow pit(s) and an anemometry mast. The ancillary infrastructure proposed may change as the final parameters of the Development are identified throughout the iterative EIA process.

The Development is located approximately 5 km east of Strabane and 6 km southeast of Artigarvan, in County Tyrone, as shown in Figure 1.1 of Appendix B of this Scoping Report. Glenmornan is the closest settlement to the Development, located approximately 1.6 km north of the Site Boundary (i.e., the boundary shown on Figure 1.1). The small village of Ballynamallaght is also located 4.3 km northeast of the Site Boundary.

Elevation ranges from approximately 150 m above ordnance survey datum (AOD, approximately equivalent to sea level) in the west of the Site, to approximately 400 m AOD in the south of the Site. The turbine envelope is largely located within areas of improved acid grassland, acid grassland, improved grassland and modified blanket bog, as shown in Figure 2.1: Indicative Site Layout of Appendix B.

2.1 Turbines

For the purposes of the EIA, a precautionary approach will be taken and a worst-case scenario will be identified and assessed for each receptor, as appropriate. It is important to note that the most suitable turbine model for a particular location can change with time; therefore, a final choice of machine for the Development has not yet been made. The most suitable machine for the Development would be chosen shortly before construction, subject to the procurement process and would be within the overall turbine parameters consented.

A summary of the proposed turbine details is set out in Table 2.1, and an indicative turbine layout is shown in Figure 2.1 of Appendix B.

Table 2.1: Summary of Proposed Turbines

Number of Turbines	Up to 15
Height to blade tip of turbines	Up to 180 m
Type of turbine	Three bladed, horizontal axis
Generating capacity (per turbine)	Approx. 4 – 6 MW
Total wind farm generation capacity	> 50 MW to ~ 77 MW

Each turbine transformer will be located either within the turbine nacelle, within the base of the tower or in a small enclosure at the base of the turbine.

2.2 Electrical Infrastructure

Underground cabling, laid where possible alongside the access tracks, will link the turbine transformers to the onsite substation. The substation will likely take the form of a single storey building housing the electrical infrastructure, although certain elements may be located externally within a fenced compound.

The electrical connection to the electricity network falls under a separate consent process and will be subject to a separate environmental investigation and associated consent application if required. As such it will not be considered as part of the EIA for the Development; however, as part of the ES for the Development a high-level review of the proposed electrical connection will be provided in the Development Description.

2.3 Temporary Construction Compound

A temporary construction compound will be required during the construction of the Development, forming an area of hardstanding providing space for portakabins, parking, lay down areas and potentially concrete batching.

2.4 Anemometry Mast

An anemometry mast will be required for the life span of the wind farm, of a height similar to the hub height of the proposed wind turbines.

2.5 Decommissioning of the Development

When the operational phase ends, the Development will require decommissioning. It is not proposed to time limit the operational phase however components within the Development have a finite lifetime and therefore decommissioning must be considered. Typically, all above ground infrastructure will be dismantled and removed, whilst cables and turbine foundations will be cut 1 m below ground level and covered with topsoil.

All wind turbine infrastructure including transformers would be removed from the Site and recycled or disposed of in accordance with good practice and market conditions at that time. In June 2021, the Applicant committed to the reuse, recycling or recover of all wind turbine blades in its global portfolio of onshore and offshore wind farms upon decommissioning as part of work towards achieving a carbon-neutral footprint by 2040 and avoiding land fill[4][5], whilst the remaining components such as tower sections are readily recyclable.

The future of the Development substation would be discussed with network operators and agreed with the local planning authority prior to commencement of decommissioning. A Decommissioning Plan, to include timescales and transportation methods, will be agreed in advance with the local planning authority.

There can be a high degree of uncertainty regarding decommissioning as engineering approaches and technologies are likely to change over the operational life of the Development. However, the effects of decommissioning are similar to, or often of a lesser magnitude than construction effects and, as such can be scoped out of further assessment.

[4] Ørsted (2021) *Ørsted commits to sustainable recycling of wind turbine blades*. Available at: https://orsted.com/en/media/newsroom/news/2021/06/702084352457649 (Accessed 25/06/21)

[5] Ørsted (2021) *Ørsted commits to sustainable recycling of wind turbine blades*. Available at: https://orsted.com/en/media/newsroom/news/2021/06/702084352457649 (Accessed 25/06/21)

2.6 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q2.1: Are DfI and consultees content for decommissioning for the Development to be scoped out of further assessment?

Q2.2: Do DfI and consultees have an opinion on the Applicants proposal to seek an in-perpetuity consent for the Development?

3 SITE SELECTION

3.1 The Site and Surrounding Area

The Development is located approximately 5 km east of Strabane and 6 km southeast of Antigarvan, in County Tyrone, as shown in Figure 1.1 of Appendix B of this Scoping Report. Glenmornan is the closest settlement to the Development, located approximately 1.6 km north of the Site Boundary. The indicative Site Boundary, as shown on Figure 1.1, is approximately 623 hectares (ha). The Site is centred on Irish NGR 242862, 396786 with the location and indicative layout shown on Figure 2.1.

The topography of the Site and immediate vicinity is complex and largely consists of improved acid grassland, acid grassland, improved grassland and modified blanket bog, with farmland and operational and consented windfarms also present (operational Owenreagh I Wind Farm (Planning Ref: J/93/0286) and operational Owenreagh II Wind Farm (Planning Ref: J/93/0286)). The Site itself varies significantly in elevation ranging from approximately 150 m above ordnance survey datum (AOD, approximately equivalent to sea level) in the west of the Site, to approximately 400 m AOD in the south of the Site. There are a number of hilltops bordering the Site Boundary, with no summits located within the Site; Owenreagh Hill to the South (453 m AOD), and Evish Hill to the west (249 m AOD). There is also one water body nearby in Moor Lough, which is 0.44 km northeast of the Site Boundary.

Glenmornan is the closest notable settlement to the Site, approximately 1.6 km to the north of the Site. The closest residential property is located at Koram Road, situated approximately 1.03 km west of the closest indicative turbine location, however this property is financially involved in the project. The closest property which is not financially involved is located at Silverhill Road, approximately 1.24 km west of the closest indicative turbine location. There are also a number of residential properties situated intermittently around the Development.

The Site is located entirely within the Sperrin Area of Outstanding Natural Beauty (AONB).

There are no ecologically designated sites within the Site however there are a number of ecological designations located within 15 km of the Site, as shown on Figure 7.1: Ecological and Ornithological Designations of Appendix B. These include:

- River Foyle and Tributaries Special Area of Conservation (SAC), approximately 5.4 km east;
- Owenkillow River SAC, approximately 5.8 km south;
- River Faughan and Tributaries SAC, approximately 9.1 km northeast; and
- 15 Areas of Special Scientific Interest (ASSI).

There are two National Nature Reserves (NNR) within 15 km of the Site as shown on Figure 7.1. The Boorin NNR is located 11.8 km south east of the Site Boundary at its closest point. The Ness and Envy Wood NNR is also located 14.2 km north east of the Site.

Figure 11.1: Cultural Heritage Designations in Appendix B shows there are 15 Scheduled Monuments within 5 km of the Site Boundary and 78 Scheduled Monuments within 15 km of the Site Boundary. The nearest Scheduled Monument is Killeen (B21/82) located 1.5 km southeast of the nearest indicative turbine location, with the other Scheduled Monument being the Stone Circle (B92/83) located 1.9 km northwest of the nearest indicative turbine location. Figure 11.1 also shows there are 37 Listed Buildings within 5 km of the Site Boundary, with 322 being within 15 km of the Site Boundary. The nearest Listed Building is Category B2 House and Outbuilding (HB10/09/028), located 1.2 km east of the nearest indicative turbine location; the second closest Listed Building is the Grade B1 St Joseph's RC Church, (HB10/11/007), located 2.7 km northwest of the nearest indicative turbine location. In addition to these, there are also seven Registered Parks, Gardens and Demesnes within 15 km of the Site Boundary.

3.2 Site Selection and Alternatives

The ES will include a chapter setting out the alternatives that have been considered prior to and during the EIA process, as required by the EIA Regulations.

The default alternative is the "do nothing" scenario. There is strong UK policy support for decarbonising the energy sector, and an increase in renewable energy generation is the lowest cost solution to this. The chapter will briefly examine the need for the Development, or similar developments, concluding that the "do nothing" scenario is not desirable.

The ES Chapter will contain a description of the process of site selection that led to the proposal to develop a wind farm at the Site, setting out the economic and environmental reasons for selecting this Site.

The Development design strategy will be set out, identifying the specific design principles, which design iterations will seek to meet. These will include the following aspects:

- Economic viability;
- Buildability;
- Residential amenity;
- Electricity generation potential;
- Visual integration with the surrounding wind farms;
- Avoiding harm to archaeological and cultural heritage assets; and
- Minimising other environmental effects as far as practicable.

The design process will involve a series of iterations to improve the fit of the design to the design principles. This will include the location of the turbines and other infrastructure. The Chapter will set out the changes made at each iteration, and the reasons for these changes, with reference to the design principles and input from the consultation process.

4 ENVIRONMENTAL IMPACT ASSESSMENT

EIA is an iterative assessment process with the aim of avoiding or reducing the potential effects resulting from the Development through the continual refinement of its design. These effects can occur throughout all phases of the Development from construction, through operation and during decommissioning. Any potential effects will be mitigated utilising the mitigation hierarchy of avoid, reduce, offset and compensate.

Schedule 4 of the EIA Regulations details what information is required to be included within the ES and states:

"3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of availability of environmental information and scientific knowledge.

4. A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape."

The results of the EIA will be presented in an ES, which, as prescribed in the EIA Regulations is required include a "*description of the likely significant effects*" of the Development; effects which are not considered to be significant do not need to be described. It is therefore necessary for the scope of the EIA to be appropriately defined to ensure all significant effects are covered.

4.1 Scope of the EIA

The aim of the Scoping process is to identify environmental issues at an early stage, to determine which elements of the Development are likely to result in significant effects on the environment and to establish the extent of survey and assessment required for the EIA.

This Report therefore provides details of the assessment areas which will be included within the ES to meet the information requirements as set out in Schedule 4 of the EIA Regulations. These assessment areas are detailed in Sections 6 to 15 of this Report, and comprise the following:

- Section 6 – Landscape and Visual
- Section 7 – Ornithology
- Section 8 – Ecology
- Section 9 – Geology and Peat
- Section 10 – Hydrology and Hydrogeology
- Section 11 – Archaeology and Cultural Heritage
- Section 12 – Noise
- Section 13 – Traffic and Transport
- Section 14 – Land Use, Socio-Economics and Tourism
- Section 15 – Other Issues (Human Health and Safety, Major Accidents and Disasters, Shadow Flicker, Waste, Telecommunications and Aviation).

Throughout the EIA process, effects arising during the construction, operation and decommissioning phases will be assessed and mitigation measures will be considered for each assessment area, where appropriate. These considerations will also be detailed within the ES.

4.2 Approach to EIA

As stated previously, EIA is an iterative process aimed at identifying and assessing the potential effects arising as a result of a proposed development. Any effects identified will be used to inform and refine the design of the Development. Where adverse effects are identified that cannot be avoided through embedded mitigation, suitable mitigation measures to reduce or offset effects will be proposed. In addition, the EIA will be used to identify potential enhancement measures that could be applied to maximise beneficial effects.

The main steps of the EIA process are broadly summarised as follows:

- **Scoping** [CURRENT STAGE]: The Scoping Opinion from DfI will be used to inform and focus the scope of the EIA on likely significant effects that could be anticipated to occur as a result of the Development;
- **Baseline studies**: Desk-based assessment, baseline surveys and site visits will be undertaken, where appropriate, in order to determine the baseline conditions of the environment and area that may be affected by the Development;
- **Predicting and assessing effects**: Potential interactions between the Development and the baseline conditions will be considered. The nature of the effects, e.g., direct or indirect; positive or negative; long, medium or short term; temporary or permanent, will be predicted and assessed. Potential cumulative effects arising from Development in conjunction with other proposed or consented developments will also be considered;
- **Mitigation and assessment of residual effects**: Potential effects will be avoided or reduced wherever possible through embedded mitigation. Where this is not possible, operational mitigation or other measures to reduce and/or offset significant effects will be proposed. The residual effects will then be assessed to determine any effects predicted to remain following implementation of the recommended mitigation measures; and
- **Production of the ES**: The results of the EIA will be set out in the ES.

4.2.1 Guidance

Relevant legislation, policy and guidance are referred to in each of the technical assessments within this Report. The overarching regulation, policy and guidance documents which have been used in preparing this Scoping Report are:

- The Planning Act (Northern Ireland) 2011[6];
- The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017[7];
- The Planning (General Development Procedure) Order 2015 (as amended 2016)[8]; and
- The Planning (Development Management) Regulations (Northern Ireland) 2015[9].

The preparation and production of the ES will be conducted in accordance with relevant regulations and good practice guidance as outlined above. Further details of the above guidance can be found in Section 5: Policy and Legislative Context.

[6] Northern Ireland Assembly (2011), Planning Act (Northern Ireland) 2011. Available at: https://www.legislation.gov.uk/nia/2011/25/contents. (Accessed on 16/06/21)

[7] Northern Ireland Assembly (2017), The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017. Available at: https://www.legislation.gov.uk/nisr/2017/83/made (Accessed on 16/06/21)

[8] Northern Ireland Assembly (2016), The Planning (General Development Procedure) Order (Northern Ireland) 2015 (as amended). Available at: https://www.legislation.gov.uk/nisr/2015/72/contents/made (Accessed on 16/06/21)

[9] Northern Ireland Assembly (2015), The Planning (Development Management) Regulations (Northern Ireland) 2015. Available at: https://www.legislation.gov.uk/nisr/2015/71/contents/made (Accessed on 16/06/21)

4.2.2 Assessment Methodology

In order to assess the potential effects arising from the Development, the significance of such effects will be determined. The determination of significance relates to the sensitivity of the resource or receptor being affected and the magnitude of change as a result of the effect. The assessment of effects will combine professional judgement together with consideration of the following:

- The sensitivity of the resource or receptor under consideration;
- The magnitude of change, in relation to the degree of change which occurs as a result of the Development;
- The type of effect, i.e., adverse, beneficial, neutral or uncertain;
- The probability of the effect occurring, i.e., certain, likely or unlikely; and
- Whether the effect is temporary, permanent and/or reversible.

A generalised methodology for assessing significant effects is detailed below, however each individual technical area will have a specific assessment methodology which may vary from that detailed in the following subsections.

4.2.2.1 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement.

Table 4.1 details a general framework for determining the sensitivity of receptors. Each technical assessment will specify their own appropriate sensitivity criteria that will be applied during the EIA and details will be provided in the relevant ES Chapter.

Table 4.1: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is low environmental value, or local importance.
Negligible	The receptor is resistant to change and is of little environmental value.

4.2.2.2 Magnitude of Change

The magnitude of potential change will be identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

General criteria for assessing the magnitude of change are presented in Table 4.2. Each technical assessment will apply their own appropriate magnitude of effects criteria during the EIA, with the details provided in the relevant ES Chapter.

Table 4.2: Framework for Determining Magnitude of Change

Magnitude of Effects	Definition
High	A fundamental change to the baseline condition of the asset, leading to total loss or major alteration of character.
Medium	A material, partial loss or alteration of character.
Low	A slight, detectable, alteration of the baseline condition of the asset.
Negligible	A barely distinguishable change from baseline conditions.

If change of zero magnitude (i.e., non/no change) are identified, this will be made clear in the assessment.

4.2.2.3 Significance of Effect

The sensitivity of the asset and the magnitude of the predicted change will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. Table 4.3 summarises guideline criteria for assessing the significance of effects.

Table 4.3: Framework for Assessment of the Significance of Effects

Magnitude of change	Sensitivity of Receptor				
	Very High	**High**	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

Zero magnitude effects upon a receptor will result in no effect, regardless of sensitivity.

4.2.3 Mitigation

Where the EIA identifies likely significant adverse environmental effects, mitigation measures will be proposed in order to avoid, reduce, offset or compensate those effects. These mitigation measures may be embedded in the design or compensatory. Such embedded mitigation measures will likely include the movement or loss of turbines, access tracks and other infrastructure; and management and operational measures.

The strategy of avoidance, reduction, offsetting and compensation seeks to:

- First to avoid significant adverse effects;
- Then to minimise those which remain; and
- Lastly, where no other remediation measures are possible, to propose appropriate compensation.

In addition, enhancement measures may be incorporated into design of the Development to maximise environmental benefits.

4.2.4 Residual Effects

Taking cognisance of the suggested mitigation (and enhancement) measures, the predicted effects will be re-assessed to determine whether any residual effects remain.

4.2.5 Cumulative Effects

In accordance with the EIA Regulations, this EIA will also give consideration to 'cumulative effects'. By definition, these are effects that result from incremental changes caused by past, present or reasonably foreseeable future actions together with the Development. For cumulative assessment, two types of effects will be considered:

- The combined impact of individual effects from the same development, for example noise, airborne dust or traffic on a single receptor; and
- The combined impact from the effects of several developments that may on an individual basis be insignificant but, cumulatively may be significant.

In line with good practice, the methodology to be adopted for assessing the cumulative effects of wind energy developments will be in accordance with advice from SNH[10,11] and the UK Government. The extent of any cumulative assessment relative to each technical assessment will be agreed during the consultation process and can include both existing and proposed wind farm developments as well as other forms of development.

Wind energy development has been stimulated by the policy support shown by the UK Governments. At the time of writing, it is known that there are other operational wind farms and a number of wind energy proposals located in the vicinity of the Site. Known wind farm developments are shown on Figure 6.6: Cumulative Wind Farm Locations in Appendix B.

Cumulative effects will be considered for each technical area assessed within the EIA. The extent of the cumulative assessment relative to each technical assessment are proposed in the following sections.

4.2.6 Alternatives

Schedule 4, Part 2 of the EIA Regulations requires an outline of reasonable alternatives (such as technology, location, size and scale) considered and the main reasons why the Development was chosen, taking into account the environmental effects. Details of this will be provided within the ES.

Consideration of alternative designs has already begun. The final layout of the Development will be based on a range of technical criteria, such as separation distances between turbines, wind speed, prevailing wind direction, existing infrastructure, topography, ground conditions, local environmental issues (including peatland habitats), NI planning policy, and landscape and visual considerations. The identification of these criteria is an iterative process: as they are identified the layout of the Development, including ancillary infrastructure, will undergo a series of modifications to avoid or reduce potential effects through careful design. This process will be set out in the ES.

[10] Scottish Natural Heritage. (2014). *A Handbook for Environmental Impact Assessment*

[11] Scottish Natural Heritage. (2012). *Assessing the Cumulative Impact of Onshore Renewable Energy Sites*

4.3 Structure and Content of the ES

The content of the ES will broadly follow the specifications detailed within Schedule 4 of the EIA Regulations. The ES will consist of three volumes and a Non-Technical Summary (NTS).

- Volume 1 – Main ES text;
- Volume 2 – Figures, including
  - Volume 2a: Figures (excluding LVIA);
  - Volume 2b: LVIA Figures; and
  - Volume 2c: Visualisations
- Volume 3 – Technical Appendices.

The front end of the main ES text will include:

- An introduction, including a summary of the EIA process and methodology;
- Description of the Site and its surroundings;
- Details of alternative considered and the Development; and
- A summary of the relevant planning policy and environmental context.

The technical chapters of the ES will present details of the assessments undertaken, including any cumulative effects, required mitigation and residual effects.

5 POLICY AND LEGISLATIVE CONTEXT

5.1 Introduction

This section of the Scoping Request outlines the planning legislative context for the Development as well as identifying the key policy documents of relevance to the Development which will be considered throughout the preparation of the ES.

It is envisaged that the documents identified within this section will be considered in further detail during the preparation of the planning application for the Development.

5.2 Renewables and Northern Ireland

In 2010, the Department for Enterprise, Trade and Investment (DETI) published the Strategic Energy Framework (SEF)[12] which detailed Northern Ireland's (NI) energy future over the next ten years and set the renewable electricity targets for 2020- identifying that 40% of electrical energy needed to be sourced from renewables by 2020. The Department for Economy's statistics on *'Electricity Consumption and Renewable Generation in Northern Ireland' (*June 2017) latest results show that:

In June 2021, the Department for the Economy published the *'Electricity Consumption and Renewable Generation in Northern Ireland: Year ending March 2021'*, which highlighted that for the 12-month period April 2020 to March 2021, 46.4% of total electricity consumption in Northern Ireland was generated from renewable sources. Of all renewable electricity generated within Northern Ireland over the 12-month period, 83.7% was generated from wind.[13]

It is noted that in the Planning Appeals Commission (PAC) Decision (Appeal Ref 2009/A0363) Gaelectric, the Commissioner T A Rue acknowledged that *"it is noteworthy that the 40% is a minimum target and not a cap".*

The 2010 SEF notes that electricity generated by onshore wind farms is the most established, large-scale source of renewable energy in Northern Ireland. It also states that onshore wind farms will play a vital role in meeting the new renewable electricity target.

The Northern Ireland Investment Strategy 2011-2021[14] highlights the importance of renewable sources in electricity generation. The long-term targets are emphasised, underlining that the UK Climate Change Act 2008[15] legislated for an 80% mandatory cut in the UK's carbon emissions by 2050 (compared to 1990 levels), with a target of 35% by 2025.

The Onshore Renewable Energy Action Plan 2013-2020[16] considers the contribution of onshore renewable technologies to the 40% renewable energy target by 2020 and recognises the impact that onshore wind has on the electricity network in NI.

The targets are in line with international energy policy aims, which are based on the demand to battle climate change and reduce carbon dioxide (CO_2) emissions. The landmarks in international energy policy have included; The United Nations Framework

[12] Department of Enterprise, Trade and Investment (2010). Strategic Energy Framework. Available at: https://www.economy-ni.gov.uk/publications/energy-strategic-framework-northern-ireland (Accessed on 07/06/21)

[13] Department for the Economy (2021), Electricity Consumption and Renewable Generation in Northern Ireland: Year Ending March 2021, Available at: https://www.economy-ni.gov.uk/news/electricity-consumption-and-renewable-generation-northern-ireland-year-ending-march-2021, (Accessed on 07/06/21)

[14] Northern Ireland Executive (2015). Investment Strategy for Northern Ireland 2011 – 2021. Available online at: https://www.infrastructure-ni.gov.uk/publications/investment-strategy-northern-ireland-2011-2021 (Accessed on 07/06/21)

[15] UK Government (2008), Climate Change Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/27/contents (Accessed on 16/06/21)

[16] Department of Enterprise, Trade and Investment (2013). Onshore Renewable Electricity Action Plan. Available at: https://www.economy-ni.gov.uk/articles/onshore-renewable-electricity-action-plan (Accessed on 07/07/2017)

Convention on Climate Change (UNFCCC)[17] - implemented by the United Nations in May 1992, determined a long-term objective to lessen greenhouse gases in the atmosphere; and the Kyoto Protocol - implemented in 1997 by national governments committed to reducing their greenhouse gas emissions.[18]

The Paris Agreement[19] has the central objective to boost global response to climate change, keep global temperature rise low and strengthen efforts to support this.

Recently the Department for the Economy for Northern Ireland published the invite for consultation on options for the new Northern Ireland Energy Strategy 2050. The plans include the aim to all but eliminate carbon emissions from the region's energy use. Among the proposals is a new target of generating 70% of electricity from renewables by 2030.[20]

The Development will contribute towards meeting the Northern Irish key renewable targets, which will result in an increased overall generating capacity as well as securing continuity of renewable energy provision.

5.3 Planning Legislative Context

Table 5.1 outlines the Northern Ireland planning legislative (primary legislation and subordinate legislation) context for the Development.

Table 5.1: Northern Ireland Planning Legislation Context

Northern Ireland Planning Legislation	
Primary Legislation	
The Planning Act (Northern Ireland) 2011[21]	The Planning Act (NI) 2011 Act provides the legislative basis for the Northern Ireland planning system including the development management systems, development plan preparation, planning appeals and enforcement and the way in which these functions are delivered.
Subordinate Legislation	
The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 [22]	The legislative framework for EIA is set out by the EIA Directive (European Directive 2014/52/EU² amending EIA Codified Directive 2011/92/EU). The requirements of the EIA Directive in NI are transposed by the Planning (Environmental Impact Assessment) Regulations (NI) 2017 (the EIA Regulations). The EIA Directive aims to ensure that a planning authority granting planning permission for a development proposal makes its decision with the full knowledge of any likely significant effects on the environment by setting out a procedure known as environmental impact assessment to assess such effects. Reasons for determination and decisions must be provided and shared with the public.
The Planning (General	The main purpose of the Planning (General Development Procedure) Order 2015 (as amended 2016) is to transfer the necessary powers required to operate the

[17] United Nations (UN) (2021), What is the United Nations Framework Convention on Climate Change? Available online at: https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change

[18] United Nations (UN) (2021), What is the Kyoto Protocol? Available online at: https://unfccc.int/kyoto_protocol [Accessed 16/06/2021]

[19] United Nations (UN) (2021), The Paris Agreement. Available online at: https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement [Accessed 16/06/21]

[20] Department for the Economy (2021), Consultation on policy options for the new Energy Strategy for Northern Ireland, https://www.economy-ni.gov.uk/articles/northern-ireland-energy-strategy-2050 [Access on 06/06/21]

[21] Northern Ireland Assembly (2011), Planning Act (Northern Ireland) 2011. Available at: https://www.legislation.gov.uk/nia/2011/25/contents. [Access on 16/06/21]

[22] Northern Ireland Assembly (2017), The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017. Available at: https://www.legislation.gov.uk/nisr/2017/83/made [Access on 16/06/21]

Northern Ireland Planning Legislation	
Development Procedure) Order 2015 (as amended 2016)[23]	planning system currently contained within the Planning (General Development) Order 1993 (the 1993 GDO) to the councils. It also introduces some new provisions, namely: Design and access statements for major applications; Non-material changes to a previous grant of planning permission: Publicity of applications for planning permission; and Changes to the statutory consultation process.
The Planning (Development Management) Regulations (Northern Ireland) 2015[24]	The Planning (Development Management) Regulations (NI) 2015 sets out the details of key elements of the development management process in relation to the hierarchy of development, pre-application community consultation, pre-determination hearings and schemes of delegation while also making a transitional provision.
The Planning (Fees) Regulations (Northern Ireland) 2015 (as amended) [25]	The effect of the Planning (Fees) Regulations (NI) (as amended) is to provide for the charging of a fee for the processing of a planning application.

5.3.1 The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017

The Development is classified as 'Schedule 2' development as detailed in the EIA Regulations 2017. See **Section 4**: **Environmental Impact Assessment** of this Scoping Report for further details on The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017.

5.4 Planning Policy Context

Table 5.2 outlines the NI planning policy context. The planning policy context identifies relevant planning policy at a regional and local planning policy level. The Planning Statement, which will be submitted alongside the ES, and the technical ES Chapters will assess the Development against the national and local policies outlined below.

[23] Northern Ireland Assembly (2016), The Planning (General Development Procedure) Order (Northern Ireland) 2015 (as amended). Available at: https://www.legislation.gov.uk/nisr/2015/72/contents/made [Access on 16/06/21]

[24] Northern Ireland Assembly (2015), The Planning (Development Management) Regulations (Northern Ireland) 2015. Available at: https://www.legislation.gov.uk/nisr/2015/71/contents/made [Accessed on 16/06/21]

[25] Northern Ireland Assembly (2019), The Planning (Fees) (Amendment) Regulations (Northern Ireland) 2019. Available at: https://www.legislation.gov.uk/nisr/2019/112/made [Accessed on 16/06/21]

Table 5.2: Northern Ireland Planning Policy Context

Planning Policy Document	Key Policies
Regional Development Strategy (RDS) for Northern Ireland 2035[26]	The RDS outlines 'Regional Guidance' (RG) which applies to everywhere in the region and is presented under 3 sustainable themes of Economy, Society and Environment. RG5 - Deliver a sustainable and secure energy supply; RG9 - Reduce our carbon footprint and facilitate mitigation and adaptation to climate change whilst improving air quality; and RG11 - Conserve, protect and, where possible, enhance our built heritage and our natural environment.
Strategic Planning Policy Statement for Northern Ireland (SPPS) September 2015[27]	SPPS Subject Policies: Archaeology and Built Heritage (Para 6.1- 6.30); Development in the Countryside (Para 6.61- 6.78); Flood Risk (Para 6.99- 1.132); Natural Heritage (Para 6.168- 6.198); Renewable Energy (Para 6.214- 6.234); Telecommunications and other Utilities (Para 6.235- 6.250); Tourism (Para 6.251- 6.266); Transportation (Para 6.293- 6.305); and Waste Management (Para 6.306- 6.323).
Strategic Planning Policy Review for Renewable & Low Carbon Energy[28]	The strategic DfI planning policy review for renewable & low carbon energy is ongoing. The updated policy will have regard to the emerging new Energy Strategy and targets for renewable energy contained therein. Amendments to current suite of wind energy policy will be reviewed and assessed on an ongoing basis.
Planning Policy Statement 2 - Natural Heritage[29]	Policy NH1 – European and Ramsar Sites – International Policy NH2 – Species Protected by Law Policy NH3 – Sites of Nature Conservation Importance - National Policy NH4 – Sites of Nature Conservation Importance - Local Policy NH5 – Habitats, Species or Features of Natural Heritage Importance Policy NH6 – Areas of Outstanding Natural Beauty
Planning Policy Statement 3 - Access, Movement and Parking (PPS3, revised 2015)[30]	Policy AMP 1 - Creating an Accessible Environment Policy AMP 2 - Access to Public Roads

[26] Department for Regional Development (2010), Regional Development Strategy (RDS) 2035. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/regional-development-strategy-2035.pdf [Accessed on 16/06/21]

[27] Department of the Environment (2015), The Strategic Planning Policy Statement (SPPS). Available at: https://www.infrastructure-ni.gov.uk/publications/strategic-planning-policy-statement [Accessed on 16/06/21]

[28] Department for Infrastructure (2021), Mallon gives 'green light' to renewable energy planning review. Available at: https://www.infrastructure-ni.gov.uk/news/mallon-gives-green-light-renewable-energy-planning-review [Accessed on 16/06/21]

[29] Department of the Environment (2013) Planning Policy Statement 2 Natural Heritage. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS02%20Natural%20Heritage.pdf [Accessed on 16/06/21]

[30] Department of the Environment (2005), Planning Policy Statement 3 - Access, Movement and Parking. Available at: https://www.infrastructure-

Planning Policy Document	Key Policies
	Policy AMP 3 - Access to Protected Routes (as updated in PPS 3 Clarification) Policy AMP 6 - Transport Assessment Policy AMP 7 - Car Parking and Servicing Arrangements Policy AMP 9 - Design of Car Parking Policy AMP 10 - Provision of Public and Private Car Parks
Planning Policy Statement 6 - Planning, Archaeology & the Built Heritage[31]	Policy BH2 - The Protection of Archaeological Remains of Local Importance and their Settings Policy BH3 - Archaeological Assessment & Evaluation Policy BH 4 - Archaeological Mitigation Policy BH 11 - Development affecting the Setting of a Listed Building
Planning Policy Statement No.10 - Telecommunications [32]	Policy Tel 2 - Development and Interference with Television Broadcasting Services
Planning Policy Statement 13 - Transportation and Land Use[33]	General Principle 5 - Developers should bear the cost of transport infrastructure necessitated by their development.
Planning Policy Statement No.16 – Tourism [34]	Policy TSM 8 - Safeguarding of Tourism Assets
Planning Policy Statement No.18- Renewable Energy including PPS 18 Best practice Guidance (BPG) and Supplementary Planning Guidance (SPG) [35]	Policy RE1 - Renewable Energy PPS 18 BPGs outline the use of ETSU-R-97 for noise assessments for windfarm development and guidelines for shadow flicker assessment.
Planning Policy Statement No.21 - Sustainable Development in the Countryside [36]	Policy CTY 1 - Development in the Countryside Policy CTY 13 - Integration & Design of Buildings in the Countryside.

ni.gov.uk/sites/default/files/publications/infrastructure/PPS03%20Access%20Movement%20and%20Parking.pdf [Accessed on 16/06/21]

[31] Department of the Environment (1999) Planning Policy Statement 6 - Planning, Archaeology & the Built Heritage. Available at: https://www.infrastructure-ni.gov.uk/publications/retained-planning-policy [Accessed on 16/06/21]

[32] Department of the Environment (2002), Planning Policy Statement No.10 – Telecommunications. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS10%20Telecommunications.pdf [Accessed on 16/06/21]

[33] Department for Regional Development (2005), Planning Policy Statement 13 - Transportation and Land Use. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS13%20Transportation%20and%20Land%20Use.pdf [Accessed on 16/06/21]

[34] Department of the Environment (2013), Planning Policy Statement 16: Tourism. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS16%20Tourism.pdf [Accessed on 16/06/21]

[35] Department of the Environment (2009), Planning Policy Statement 18 'Renewable Energy'. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS18%20Renewable%20Energy.pdf [Accessed 16/06/21]

[36] Department of the Environment (2010), Planning Policy Statement 21 Sustainable Development in the Countryside. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS21%20Sustainable%20Development%20in%20the%20Countryside.pdf [Accessed on 16/06/21]

Planning Policy Document	Key Policies
Local Planning Policy	
Extant Local Development Plan- Strabane Area Plan 1986-2001[37]	Until Derry City and Strabane District Council (the Council) adopt their new Local Development Plan 2032, the Strabane Area Plan is the current adopted local development plan for the respective area. The site is located in the countryside, outside any settlement as defined within the Plan. The Plan has no policies for wind farm development in the countryside, and no other outlined policies are of any significant relevance. Therefore, it is considered that the SPPS, and Planning Policy Statements will be key material planning considerations in the absence of an up-to-date adopted local plan.
Emerging local development plan: Derry City & Strabane District Council Local Development Plan 2032[38]	The Council are currently preparing their Local Development Plan 2032, which when adopted will replace all existing plans for the Council area, and all planning applications must have regard to. The Draft Plan Strategy was published in December 2019, and is of limited material weight in the current application determination until such time as the Plan Strategy is formally adopted. The following draft policies are of relevance; NE 5 Development within or affecting the setting of the Sperrin AONB – *"… All proposals must demonstrate how they have considered siting, massing, shape, design, finishes and landscaping in order to positively enhance our important AONB landscape."* RED 1 Renewable and Low Carbon Energy Development – General Criteria – Sets out general criteria to meet for new wind energy development and repowering of existing development. *"In the first instance, proposals for renewable energy must accord with the relevant LDP landscape designations (Refer also to Chapter 21 Natural Environment): - Wind Energy Capacity Area (WECA) - Special Countryside Area (SCA) - Area of High Landscape Importance (AHLI) - Area of Outstanding Natural Beauty (AONB)"* *"Within designated Wind Energy Capacity Areas (WECAs), any further wind energy development proposals, including re-powering, will need to be very carefully considered so that they do not unacceptably intensify existing adverse landscape impacts in these area"* Designation WECA 1 - Wind Energy Capacity Areas (WECAs) - localised areas of the District that have experienced significant pressure (existing operational and approved) from wind farms and single turbines so need careful consideration of any further such proposals, to prevent unacceptable further development. These designations are indicated for strategic purposes only and boundaries will be fully defined at the LDP Local Policies Plan (LPP) stage. The policy for such developments in these areas is set out in Chapter 24: Renewable Energy. It is anticipated that the Plan Strategy may be adopted in late 2022.

[37] Strabane District Council Area (1991), Strabane Area Plan 1986-2001. Available at: https://www.infrastructure-ni.gov.uk/topics/planning/strabane-area-plan-1986-2001 [Accessed on 16/06/21]

[38] Derry City & Strabane District Council (2021), Local Development Plan (LDP) 2032. Available at: https://www.derrystrabane.com/Subsites/LDP/Local-Development-Plan [Accessed on 16/06/21]

5.4.1 5.4.1 Regional Planning Policy- Strategic Planning Policy Statement (SPPS Transitional Arrangements)

A transitional period will operate until such times as the Local Development Plan Strategy for the whole Council area has been adopted. During the transitional period planning authorities will apply existing retained policy together with the SPPS. Relevant supplementary and best practice guidance will also continue to apply. Where a Council adopts its Plan Strategy, existing policy retained under the transitional arrangements shall cease to have effect in the district of that Council and shall not be material from that date, whether the planning application has been received before or after that date.

Any conflict between the SPPS and any retained policy (Planning Policy Statements) must be resolved in favour of the provisions of the SPPS. For example, where the SPPS introduces a change of policy direction and/or provides a policy clarification that would conflict with the retained policy the SPPS should be accorded greater weight in the assessment of individual planning applications. However, where the SPPS is silent or less prescriptive on a particular planning policy matter than retained policies, this should not be judged to lessen the weight afforded to the retained policy. PPS 18 and its associated best practice guidance (BPG) and supplementary planning guidance (SPG) are retained as planning policy.

Policy RE1 of PPS 18 and the SPPS differ in how they describe the weight that should be attached to the Project's wider environmental, economic and social benefits. The SPPS states that these are material considerations that will be given appropriate weight in determining whether planning permission should be granted whereas Policy RE1 states that they should be accorded significant weight. The policy provision of the SPPS should be accorded greater weight in the assessment of individual wind energy planning applications.

5.5 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q5.1: Do DfI Planning and Consultees agree with the key policies listed in Table 5.2 against which the effects of the Development will be assessed?

Q5.2: Are there any other areas of policy guidance the DfI Planning and Statutory Consultees would recommend is included within the ES?

Q5.3: Does DfI Planning agree with the description of the transitional arrangements outlined in 5.4.1 above?

Q5.4: Is DfI Planning satisfied with the proposal that further areas may be scoped out, with evidence and following consultation, once the detailed design and layout are developed further?

6 LANDSCAPE AND VISUAL

6.1 Introduction

This section of the Scoping Request sets out the proposed methodology and approach to be applied in the production of the Landscape and Visual Impact Assessment (LVIA) to accompany the application for the Development. It presents the suggested scope of the LVIA in terms of those landscape and visual receptors to be scoped in and scoped out of the LVIA process based on a preliminary assessment of relevant receptors to the Development.

The purpose of the LVIA is to identify and record the potential significant effects that the Development may have on physical elements of the landscape; landscape character; areas that have been designated for their scenic or landscape-related qualities; and views from various locations such as settlements, routes, hilltops and other sensitive locations. The potential cumulative effects that may arise from the addition of the Development in conjunction with other wind farms are also considered.

The LVIA will consider the potential effects of the Development during the following development stages:

- Construction of the Development;
- Operation of the Development; and
- Decommissioning of the Development

Receptors may not be affected at all three development stages.

The presence of operational Owenreagh I Wind Farm and operational Owenreagh II Wind Farm on the Site means that there is an existing influence from this type of Development. There is also a consent for Craignagapple Wind Farm which comprises six turbines each 111 m to blade tip height, reflecting the acceptance of further wind farm development on this Site.

The LVIA will consider the effects on landscape and visual receptors arising from the following components of the Development;

- The removal of operational Owenreagh I Wind Farm;
- The construction and operation of repowered Owenreagh I Wind Farm with up to 2 no. turbines of up to 180 m tip height and rotor diameter of up to 136 m;
- The construction and operation of the modified consented Craignagapple Wind Farm to increase the tip height from 111 m to up to 180 m (rotor diameter of up to 136 m) and increase the number of turbines from 6 up to 13, by extending the current site to the north, east and west; and
- The construction and operation of the associated ancillary infrastructure, including but not limited to substation compound including control building and other electrical infrastructure / new and upgraded access tracks including turning heads / crane hardstands / permanent anemometer mast / borrow pit(s) / construction compound(s) / and cable trenches.

The effect of these components will be assessed in conjunction with the cumulative effects of the retained operational Owenreagh II Wind Farm. A comparative assessment of the consented Craignagapple Wind Farm and the Development will also be undertaken.

6.2 Study Area

An area with a radius of 30 km from the nearest turbine in the Development has been applied as the LVIA Study Area. This aligns with guidance presented in the SPG[39] which

[39] Northern Ireland Environment Agency (NIEA) (2010). Wind Energy Development in Northern Ireland's Landscapes - Supplementary Planning Guidance to accompany Planning Policy Statement 18 Renewable Energy

accompanies Planning Policy Statement 18, which states "*For turbines of medium or large commercial height we would generally recommend a radius of 20-30 km."* A ZTV analysis has been carried out for this area, based on the turbine layout, as has mapping of landscape character, designations and principal visual receptors. This Study Area is shown in Figure 6.1: LVIA Study Area in Appendix B.

The Study Area is not intended to provide a boundary beyond which the Development will not be seen, but rather to define the area beyond which it is unlikely to have a significant landscape or visual effect. In reality, a significant effect is very unlikely to occur towards the edges of the Study Area due to a combination of factors such as distance from the Development, which ensures that the turbines will appear as minor features in views and will affect a very limited proportion of the wider views available; and screening by intervening buildings and vegetation.

The cumulative landscape and visual assessment also covers a Study Area of 30 km from the nearest turbine. Due to the nature of the Development, with an operational wind farm being retained on the Site and another operational wind farm being repowered, significant cumulative effects will not arise beyond this 30 km radius and are likely to be substantially more localised. Turbines of tip height 50 m or smaller are not considered and single turbines are only shown within a 5 km radius of the Development.

Known cumulative wind farms within the 30 km Study Area are shown for scoping purposes in Figure 6.6: Cumulative Wind Farm Plan. This will be updated 10 weeks prior to the application being submitted, with the list being agreed in consultation with DfI and Statutory Consultees. The key cumulative interactions are likely to occur between operational Owenreagh II Wind Farm and the Development owing to their proximity.

6.3 Assessment Methodology

6.3.1 Guidance and Standards

The LVIA will follow Optimised Environment Ltd.'s (OPEN) methodology devised specifically for the assessment of wind farm developments and generally accords with 'Guidelines for Landscape and Visual Impact Assessment: Third Edition' (Landscape Institute and IEMA, 2013)[40]('GLVIA3'), the key source of guidance for LVIA.

Other sources of guidance that will be used and referenced in the LVIA include the following:

- Visual Representation of Wind Farms Version 2.2 SNH (2017)[41];
- Visual Representation of Development Proposals, Technical Guidance Note 06/19. Landscape Institute (2019)[42];
- Assessing the Cumulative Impact of Onshore Wind Energy Developments. SNH (2012)[43];
- Technical Guidance Note 2/19 Residential Visual Amenity Assessment. Landscape Institute (2019)[44];
- Landscape Character Assessment Guidance for England and Scotland. SNH and TCA (2002)[45];
- Siting and Designing of Windfarms in the Landscape: Version 3a. SNH (2017)[46];

[40] Landscape Institute and Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment: Third Edition.

[41] Scottish Natural Heritage (2017). Visual Representation of Wind Farms Version 2.2.

[42] Landscape Institute (2019). Visual Representation of Development Proposals, Technical Guidance Note 06/19.

[43] Scottish Natural Heritage (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments.

[44] Landscape Institute (2019). Technical Guidance Note 2/19 Residential Visual Amenity Assessment.

[45] Scottish Natural Heritage and TCA (2002). Landscape Character Assessment Guidance for England and Scotland.

[46] Scottish Natural Heritage (2013). Siting and Designing of Windfarms in the Landscape: Version 3a.

- Northern Ireland Environment Agency's (NIEA) Wind Energy Development in Northern Ireland's Landscapes - Supplementary Planning Guidance to accompany Planning Policy Statement 18 Renewable Energy (2010)[47];
- Planning Policy Statement (PPS) 6: Planning, Archaeology and Built Heritage (March 1999)[48];
- Planning Policy Statement 18: Renewable Energy. Department of the Environment (2009);
- SPPS;
- Department of Agriculture, Environment and Rural Affairs (2000). The Northern Ireland Landscape Character Assessment[49];
- Department of the Environment (1991). Strabane Area Plan[50];
- Department of the Environment (2000). Derry Area Plan[51];
- Department for Regional Development (March 2012). Regional Development Strategy 2035[52];
- Northern Ireland Environment Agency (2010). Wind Energy Development in Northern Ireland's Landscapes[53].

6.3.2 Desk Study

The assessment has been initiated through a desk study of the Site and 30 km radius Study Area, combined with research of previous Environmental Statements for wind farm developments on the Site. This study has identified aspects of the landscape and visual resource that will need to be considered in the LVIA, including:

- Landscape character typology;
- Landscape-related planning designations;
- Potential cumulative wind farms;
- Routes (including roads, National Cycle Routes and long-distance walking routes); and
- Properties and settlements.

The desk study has also utilised Geographic Information System (GIS) software to explore the potential visibility of the scoping layout for the Development. The resultant Zone of Theoretical Visibility (ZTV) diagrams (Figures 6.2 to 6.5) have provided an indication of which landscape and visual receptors are likely to have key sensitivities to the Development.

6.3.3 Categories of Effects

The LVIA is intended to determine the significant effects that the Development would have on the landscape and visual resource. For the purpose of assessment, the potential effects on the landscape and visual resource are grouped into the following categories;

- Physical effects: physical effects are restricted to the area within the Site and are the direct effects on the existing fabric of the site. This category of effects is made up of landscape elements, which are the components of the landscape such as rough

[47] Northern Ireland Environment Agency (NIEA) (2010). Wind Energy Development in Northern Ireland's Landscapes - Supplementary Planning Guidance to accompany Planning Policy Statement 18 Renewable Energy

[48] Department of the Environment (1999) *PPS 6: Planning, Archaeology and the Built Heritage*. Available online at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS06%20Archaeology%20and%20Built%20Heritage_0.pdf Accessed on: 07 June 2021

[49] Department of Agriculture, Environment and Rural Affairs (2000). The Northern Ireland Landscape Character Assessment

[50] Department of the Environment (1991). Strabane Area Plan.

[51] Department of the Environment (2000). Derry Area Plan.

[52] Department for Regional Development (March 2012). Regional Development Strategy 2035.

[53] Northern Ireland Environment Agency (2010). Wind Energy Development in Northern Ireland's Landscapes.

grassland and moorland that may be directly and physically affected by the Development;

- Effects on landscape character: landscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and the way that this pattern is perceived. Effects on landscape character arise either through the introduction of new elements that physically alter this pattern of elements or through visibility of the Development that may alter the way in which the pattern of elements is perceived. This category of effects is made up of landscape character receptors, which fall into two groups; landscape character types and landscape-related designated areas;
- Effects on views: the assessment of the effects on views is an assessment of how the introduction of the Development would affect views throughout the Study Area. The assessment of effects on views is carried out in relation to representative viewpoints and principal visual receptors;
- Effects on views from properties: Residential Visual Amenity Assessment (RVAA) is carried out for properties within 2 km of turbines in line with Landscape Institute (LI) technical guidance;
- Effects of Turbine Lighting: should visible aviation lighting be required, a night time visual impact assessment is prepared to assess the potential visual impact of the turbine lights;
- Cumulative effects: cumulative effects arise where the study areas for two or more wind farms overlap so that both of the wind farms are experienced at a proximity where they may have a greater incremental effect, or where wind farms may combine to have a sequential effect. In accordance with guidance, the LVIA assesses the effect arising from the addition of the Development to the cumulative situation; and
- Comparative Assessment: Without the Development, the consented Craignagapple Wind Farm would likely be constructed[54]. Therefore, an assessment of the landscape and visual effects of the consented Craignagapple Wind Farm compared to the landscape and visual effects of the Development would be undertaken in order to consider the comparative landscape and visual effects.

6.3.4 Assessment Approach

The objective of the assessment of the Development is to predict the likely significant effects on the landscape and visual resource. In line with the EIA Regulations, the LVIA effects are assessed to be either significant or not significant.

The significance of effects is assessed through a combination of two considerations: the sensitivity of the landscape receptor or view and the magnitude of change that would result from the addition of the Development.

The geographic extent over which the landscape and visual effects would be experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude but instead is used in determining the extent in which a particular magnitude of change is experienced and the extent of the significant and non-significant effects. The extent of the effects would vary depending on the specific nature of the development proposed and is principally assessed through analysis of the geographical extent of visibility of the Development across the visual receptor.

The duration and reversibility of effects on views are based on the period over which the Development is likely to exist and the extent to which the Development will be removed, and its effects reversed at the end of that period. Duration and reversibility are not

[54] No scenario exists whereby both the Development and the Consented Craignagapple Wind Farm would be constructed.

incorporated into the overall magnitude of change and may be stated separately in relation to the assessed effects.

The 'nature of effects' relates to whether the effects of the Development are adverse, neutral or beneficial. Guidance provided in GLVIA3 states that "*thought must be given to whether the likely significant landscape and visual effects are judged to be positive (beneficial) or negative (adverse) in their consequences for landscape or for views and visual amenity*" but does not provide an indication as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and reasoned professional opinion.

OPEN generally adopts a precautionary approach which assumes that significant landscape and visual effects will be weighed on the negative side of the planning balance, although positive or neutral effects may arise in certain situations.

6.3.5 Visibility Generally

The ZTVs of the scoping layout shown in Figures 6.2 to 6.5 show a general pattern in which theoretical visibility would be concentrated in the first 10 km and then occurring more patchily beyond this. The location of the Development on the northern side of Owenreagh Hill leads to a concentration of higher-level visibility across the Sperrin Foothills to the north and north-east, and the Foyle Valley to the north west. Visibility is shown to be mostly continuous with the exception of where valleys and north-facing slopes occur. Further north, large patches of visibility occur across the south-facing slopes of the Loughermore Hills to the north-east and Derry Slopes to the north west, albeit at distances of beyond 15 km.

To the south of Owenreagh Hill, while theoretical visibility is shown to be also largely continuous, the levels are variable with only smaller patches from where all 15 turbines would be visible. This demonstrates the screening effect of the ridgeline and intervening hills which would reduce the extent to which the Development would be visible. While visibility across the Foyle Valley to the south is shown to be fairly widespread to the west, it would only occur on the western valley side and not the eastern valley side which would be screened by the intervening hills. In the upland area of Bessy Bell and Gortin, beyond 10 km to the south, high levels of visibility would occur, while across the Derg Valley to the south-west, again partial screening would mean that the full extents would not be visible. Patchier visibility extends on across this south-western part of the Study Area, out to the 30 km radius.

To the east of Owenreagh Hill, the increase in height of the Sperrin Mountains means that visibility is screened from most of the eastern part of the Study Area. Theoretical visibility is, however, most notably shown across the west-facing slopes on the closest parts of the Sperrin Mountains and along the north-facing slopes on the southern side of Glenelly Valley as well as more distant elevated summits.

To the west of the Development, the ZTV shows visibility extending across the border between NI and the Republic of Ireland (RoI), with high level visibility occurring over the western valley slopes to the Foyle Valley and into the upland landscape beyond. High level visibility is also shown to extend patchily along the northern valley side and more continuously along the southern side of the Finn Valley, as it flows west-east to join the River Foyle. Patches of visibility occur across the more elevated east facing uplands further west.

The ZTV indicates that the greatest potential for significant landscape and visual effects would occur within the first 10 km radius of the Study Area. It will also be important to consider the effects of the Development on sensitive landscape and visual receptors showing theoretical visibility beyond this 10 km radius.

6.4 Baseline Conditions and Key Sensitivities

6.4.1 Site Context

The Site is located across the northern side of Owenreagh Hill (~400 m AOD) in the western foothills of the Sperrin Mountains. It lies approximately 5 km east of the town of Strabane in Strabane District, County Tyrone. The Site is characterised by the presence of operational Owenreagh I and Owenreagh II Wind Farms, which occupy the southern part of the Site, across the summit of Owenreagh Hill and extending along the eastern ridgeline.

Owenreagh Hill forms one of the outlying hills to the west of the main ridge of the Sperrin Mountains. It is typical of the local landscape character, with its relatively steep sloping sides and rounded elevated summit and ridgeline. The hill slopes are incised by the gullies of a number of fast-flowing streams, with Owenreagh Burn flowing north-west to join with Glenmornan River to the north, and Douglas Burn flowing south-west to join the Mourne River to the south. The land cover is predominantly open moorland used as rough pasture for sheep farming with a block of coniferous forestry across the western flank and other blocks across hill slopes in the wider landscape. The openness of Owenreagh Hill means that views extend out in all directions and that is also readily visible in views from the surrounding valleys and glens.

While there is no settlement across the upper slopes of Owenreagh Hill, the surrounding rural landscape present a pattern of dispersed settlement with scattered farmsteads and other rural properties and linear hamlets and villages set along minor roads. There is a dense network of minor roads making much of the rural area accessible and reducing any sense of remoteness. The more notable B roads that surround the Site include the B536 to the south, and the B48 to the east. The A5 is the main road that accesses this area, which follows the succession of the Strule River, Mourne River and River Foyle as they wrap around the south and west of the Sperrin Mountains.

6.4.2 Landscape Character

The central and eastern parts of the Study Area lie within NI, while the western part lies within RoI. Landscape Character Areas (LCAs) are defined in all parts of the Study Area, through the detailed assessments presented in the relevant Landscape Character Assessments.

In NI, Policy RG11 of the Regional Development Strategy[55] notes the importance of landscape character in planning:

"*Landscape character is what makes an area unique. It is defined as "a distinct, recognisable and consistent pattern of elements, be it natural (soil, landform) and/or human (for example settlement and development) in the landscape that makes one landscape different from another, rather than better or worse". We can only make informed and responsible decisions on the management and planning of sustainable future landscapes if we pay proper regard to their existing character. By understanding how places differ we can ensure that future development is well situated, sensitive to its location, and contributes to environmental, social and economic objectives. The Northern Ireland Landscape Character Assessment 2000 provides valuable guidance on local landscape character and scenic quality."*

All the NI landscape is classified and published in a document, The Northern Ireland Landscape Character Assessment (NILCA) 2000[56].

Landscape character information is based on the landscape character areas (LCAs) that are described in the Supplementary Planning Guidance (SPG) document entitled 'Wind Energy

[55] Department for Regional Development (March 2012). Regional Development Strategy 2035

[56] Department of Agriculture, Environment and Rural Affairs (2000). The Northern Ireland Landscape Character Assessment

Development in Northern Ireland's Landscapes'[57]. This 2010 report in turn draws from the LCAs that were originally identified in 'NILCA'. The NI landscape was subdivided into 130 different landscape character areas, each classified in respect of its distinctive character.

The LCAs that cover the Study Area shown in relation to the scoping layout ZTV in Figure 6.3. Of the 130 LCAs which occur across NI, 23 occur either wholly or partly across the central and eastern part of the Study Area. In respect of RoI, the Landscape Character Assessment of County Donegal (2016) identifies 44 LCAs, of which 14 occur either wholly or partly across the western part of the Study Area.

The most notable landscape feature of the Study Area is the Sperrin Mountains LCA, which forms a well-defined, west-east band of hills extending from the centre of the Study Area to its eastern edge. The Development is located in the western part of this LCA, where the hills are slightly lower and wind farm development already exists in the form of operational Owenreagh I Wind Farm and operational Owenreagh II Wind Farm. Although not constructed, there is also a consent for Craignagapple Wind Farm, comprising six turbines at 111 m to blade tip height, on this Site which would be addressed within a comparative assessment with the Development.

6.4.3 Preliminary Assessment of Effects on Landscape Character Types

Table 6.1 below lists LCAs that lie within a 30 km radius of the Development and provides information about their distance to the scoping layout and relationship to the ZTV, as shown in Figure 6.3. Thereafter, each is assessed in the final column, as to whether or not, in OPEN's opinion, these areas should be scoped in or scoped out of the assessment (unless changes to the layout during the detailed design process materially alter the potential for significant effects). The boxes that are shaded grey will be assessed further within the LVIA.

The finding from this preliminary assessment is that those LCAs with potential to be significantly affected lie within the first 10 to 15 km of the Development and show relatively large patches of theoretical visibility. It is, therefore, proposed that the following LCAs be assessed in detail in the LVIA.

- LCA 20: Derg Valley;
- LCA 24: South Sperrins;
- LCA 26: Bessy Bell and Gortin LCA;
- LCA 27: Foyle Valley LCA;
- LCA 28: Glenelly Valley
- LCA 29: Sperrin Mountains;
- LCA 30: Sperrin Foothills;
- LCA 31: Burngibbagh and Drumahoe; and
- LCA 13: Foyle Valley (RoI).

Agreement from the Council and Statutory Consultees to the proposed scope for the LVIA is sought through this scoping exercise in order to enable the LVIA to be focussed on key considerations.

[57] Northern Ireland Environment Agency's (NIEA) Wind Energy Development in Northern Ireland's Landscapes - Supplementary Planning Guidance to accompany Planning Policy Statement 18 Renewable Energy (2010)

Table 6.1: Preliminary Assessment of Landscape Character

Receptor Name **LCA / LCA**	**Nearest turbine approx. (km)**	**Subject to theoretical visibility?**	**Need to assess effects further within LVIA?**
LCA 14: Lough Bradan	22 km	Yes	No, owing to the following reasons; Separation distance of 22 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility across northern boundary of LCA beyond 22 km; Other closer range operational wind farms already have an influence on this LCA.
LCA 19: Killeter Uplands	18 km	Yes	No, owing to the following reasons; Separation distance of 18 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility across north and east facing slopes of LCA beyond 18 km; Other closer range operational wind farms already have an influence on this LCA.
LCA 20: Derg Valley	9 km	Yes	Yes, owing to the following reasons; Separation distance of 9 km+ means the Development will appear middle range and medium scale; ZTV shows almost continuous theoretical visibility across large parts of the LCA; Parts of this valley landscape align towards the Site, thus forming an association.
LCA 21: Fairy Water Valley	19 km	Yes	No, owing to the following reasons; Separation distance of 19 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility through the central part of the LCA although actual visibility would be reduced by tree cover; Other closer range operational wind farms already have an influence on this LCA.
LCA 22: Omagh Farmland	17 km	Yes	No, owing to the following reasons; Separation distance of 17 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility through the central part of the LCA although actual visibility would be reduced by tree cover; Other closer range operational wind farms already have an influence on this LCA.
LCA 23 Carnowen Valley	21 km	No	No, as there is no theoretical visibility shown on the ZTV.

Receptor Name LCA / LCA	Nearest turbine approx. (km)	Subject to theoretical visibility?	Need to assess effects further within LVIA?
LCA 24: South Sperrins	7 km	Yes	Yes, owing to the following reasons; Separation distance of 7 km+ means the Development will appear middle range and medium scale; ZTV shows middle-level theoretical visibility to occur in the western part with vast majority of LCA remaining unaffected; This LCA has some association with the foothills to the north-west where the Site is located, albeit a stronger association with the higher hills to the north.
LCA 25: Beaghmore Moors and Marsh	18 km	Yes	No, owing to the following reasons; Separation distance of 18 km+ means the Development will appear distant range and small scale; ZTV shows very small patches of low-level theoretical visibility across the southern parts of the LCA; Other closer range operational wind farms already have an influence on this LCA.
LCA 26: Bessy Bell and Gortin	8 km	Yes	Yes, owing to the following reasons; Separation distance of 8 km+ means the Development will appear middle range and medium scale; ZTV shows high-level theoretical visibility to occur extensively across the northern part of this LCA; This LCA has a close association with the Sperrin Mountains LCA on the opposite side of the Foyle Valley where the Site is located.
LCA 27: Foyle Valley	3 km	Yes	Yes, owing to the following reasons; Separation distance of 3 km+ means the Development will appear close range and large scale; ZTV shows theoretical visibility to occur intermittently across this LCA; This LCA wraps around the south and west of the Sperrin Mountains LCA where the Site is located.
LCA 28: Glenelly Valley	6 km	Yes	Yes, owing to the following reasons; Separation distance of 6 km+ means the Development will appear middle range and medium scale; ZTV shows theoretical visibility to be contained on the north-facing slopes in the south-western part of the LCA; Although this LCA has a closer association with the higher hills to the north, there is still some association with the foothills to the north-west where the Site is located.
LCA 29: Sperrin Mountains	0 km	Yes	Yes, owing to the following reasons; The location of the Development in this LCA means that there will be direct and indirect effects and that the Development will appear close range and large scale; ZTV shows variable levels of theoretical visibility to occur mostly across the western part of this LCA; The Development will present the closest wind farm despite other wind farms occurring in the area.

Receptor Name LCA / LCA	Nearest turbine approx. (km)	Subject to theoretical visibility?	Need to assess effects further within LVIA?
LCA 30: Sperrin Foothills	0.5 km	Yes	Yes, owing to the following reasons; Separation distance of 0.5 km+ means the Development will appear close range and large scale; ZTV shows theoretical visibility to occur as large patches across the southern part of this LCA; The Development would bring wind farms closer to this LCA despite other wind farms occurring in the area.
LCA 31: Burngibbagh and Drumahoe	7 km	Yes	Yes, owing to the following reasons; Separation distance of 7 km+ means the Development will appear middle range and medium scale; ZTV shows that although the majority of this LCA will remain unaffected there will be a concentration of high level theoretical visibility in the southern part; There is some association between this LCA and the Site, although closer association with the Derry Slopes LCA on the opposite side of the River Foyle.
LCA 32: Derry Slopes	15 km	Yes	No, owing to the following reasons; Separation distance of 15 km+ means the Development will appear middle range and medium scale; ZTV shows very patches of theoretical visibility across the southern part of the LCA beyond 15 km; This LCA relates more closely with the Burngibbagh and Drumahoe LCA on the opposite side of the River Foyle.
LCA 33: Lough Foyle Alluvial Plain	21 km	No	No, as there is no theoretical visibility shown on the ZTV.
LCA 34: Loughermore Hills	14 km	Yes	No, owing to the following reasons; Separation distance of 14 km+ means the Development will appear middle range and medium scale; ZTV shows theoretical visibility to occur mostly as a patch in the centre as well as along the southern part of this LCA; This LCA is separated from the Site by intervening hills which reduce the association between these LCAs.
LCA 37: Roe Basin	20 km	Yes	No, owing to the following reasons; Separation distance of 20 km+ means the Development will appear distant range and small scale; ZTV shows very small patches of low-level theoretical visibility along the more distant eastern boundary; Other closer range operational wind farms already have an influence on this LCA.
LCA 40: Upper Moyola Valley	27 km	No	No, as there is no theoretical visibility shown on the ZTV.

Receptor Name **LCA / LCA**	**Nearest turbine approx. (km)**	**Subject to theoretical visibility?**	**Need to assess effects further within LVIA?**
LCA 41: Slieve Gallion	28 km	Yes	No, owing to the following reasons; Separation distance of 28 km+ means the Development will appear distant range and small scale; ZTV shows very small patches of low-level theoretical visibility to occur; Other closer range operational wind farms already have an influence on this LCA.
LCA 43: Carrickmore Hills	19 km	Yes	No, owing to the following reasons; Separation distance of 19 km+ means the Development will appear distant range and small scale; ZTV shows small patches of theoretical visibility to occur in patches across north-west facing slopes; There is no close association between this LCA and the Site of the Development.
LCA 7: Lough Foyle Coast (RoI)	29 km	Yes	No, owing to the following reasons; Separation distance of 29 km+ means the Development will appear distant range and small scale; ZTV shows that only the southern edge of this LCA lies in the Study Area; There is no close association between this LCA and the Site of the Development.
LCA 8: Buncrana Coast (RoI)	28 km	No	No, as there is no theoretical visibility shown on the ZTV.
LCA 9: Scalp Mountains (RoI)	28 km	Yes	No, owing to the following reasons; Separation distance of 28 km+ means the Development will appear distant range and small scale; ZTV shows that only the southern edge of this LCA lies in the Study Area; There is no close association between this LCA and the Site of the Development.
LCA 10: South Inishowen Farmland (RoI)	24 km	Yes	No, owing to the following reasons; Separation distance of 24 km+ means the Development will appear distant range and small scale; ZTV shows small patches of theoretical visibility across eastern parts with the remainder of the LCA largely unaffected; There is no close association between this LCA and the Site of the Development.
LCA 11: Grianin Slopes and Lowland (RoI)	17 km	Yes	No, owing to the following reasons; Separation distance of 17 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility across southern and central parts of the LCA; There is no close association between this LCA and the Site of the Development.

Receptor Name LCA / LCA	Nearest turbine approx. (km)	Subject to theoretical visibility?	Need to assess effects further within LVIA?
LCA 12: Lough Swilly Slopes (RoI)	12 km	Yes	No, owing to the following reasons; Separation distance of 12 km+ means the Development will appear middle range and medium scale; ZTV shows patches of theoretical visibility on east facing hill slopes with remainder of LCA unaffected; There is no close association between this LCA and the Site of the Development.
LCA 13: Lough Swilly Lowland and Inch Islands (RoI)	7 km	Yes	Yes, owing to the following reasons; Separation distance of 7 km+ means the Development will appear middle range and medium scale; ZTV shows theoretical visibility to occur almost continuously across much of this LCA; The Development would bring wind farms closer to this LCA despite other wind farms occurring in the area.
LCA 14: Finn Valley (RoI)	12 km	Yes	No, owing to the following reasons; Separation distance of 12 km+ means the Development will appear middle range and medium scale; ZTV shows patches of theoretical visibility across southern valley side and more patchily across northern valley side of LCA; There is no close association between this LCA and the Site of the Development.
LCA 15: Letterkenny Estuary and Farmland (RoI)	20 km	Yes	No, owing to the following reasons; Separation distance of 20 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility across central parts of LCA; There is no close association between this LCA and the Site of the Development.
LCA 16: Cark Mountain and Upland (RoI)	22 km	Yes	No, owing to the following reasons; Separation distance of 22 km+ means the Development will appear distant range and small scale; ZTV shows patches of theoretical visibility across eastern facing slopes in eastern and southern part of LCA; There is no close association between this LCA and the Site of the Development.
LCA 18: Lough Fern (RoI)	29 km	Yes	No, owing to the following reasons; Separation distance of 29 km+ means the Development will appear distant range and small scale; ZTV shows small patches of theoretical visibility on furthest western edge with majority of LCA unaffected; There is no close association between this LCA and the Site of the Development.

Receptor Name LCA / LCA	Nearest turbine approx. (km)	Subject to theoretical visibility?	Need to assess effects further within LVIA?
LCA 19: Rathmelton Swilly Coast (RoI)	26 km	Yes	No, owing to the following reasons; Separation distance of 26 km+ means the Development will appear distant range and small scale; ZTV shows patches of mixed level theoretical visibility across the LCA; There is no close association between this LCA and the Site of the Development.
LCA 40: Cashelnavern Border and Uplands (RoI)	18 km	Yes	No, owing to the following reasons; Separation distance of 18 km+ means the Development will appear distant range and small scale; ZTV shows small patches of theoretical visibility along northern edge with majority of LCA unaffected; There is no close association between this LCA and the Site of the Development.
LCA 43: Pettigo and Drumlins (RoI)	30 km	Yes	No, owing to the following reasons; Separation distance of 30 km+ means the Development will appear distant range and small scale; ZTV shows very small patches of theoretical visibility along northern edge with vast majority of LCA unaffected; There is no close association between this LCA and the Site of the Development.

6.4.4 Landscape Designations

The Landscape Designations which occur in the Study Area include Areas of Outstanding Natural Beauty (AONBs) and Registered Gardens. The Site lies in the Sperrin Mountains AONB. The landscape designations which occur in the Study Area are shown in conjunction with the scoping layout ZTV in Figure 6.4 and described below.

Areas of Outstanding Natural Beauty

The central and eastern part of the Study Area is covered by the Sperrin Mountains AONB. Designated in 2008 under the Nature Conservation and Amenity Lands (NI) Order 1985 and lying in the heart of Northern Ireland, the Sperrin Mountains AONB encompasses an extensive upland area, stretching from the Strule Valley in the west to the Lough Neagh lowlands in the east. This area presents a vast expanse of upland moorland, divided by narrow glens and deep valleys. The area is rich in historic and archaeological heritage.

The Development lies within the western part of the AONB, and this designation also covers the immediate landscape setting (up to 2 km from the nearest turbine), the local landscape setting (between 2 km and 5 km from the nearest turbine), parts of the landscape setting (between 5 km and 15 km from the nearest turbine), and the broad landscape context (between 15 km and 30 km from the nearest turbine) to the east of the Development.

The AONB designation aims to protect and enhance the landscape quality of the area as well as to promote enjoyment of the landscape by the public. Whilst views from these locations will be of heightened sensitivity, wind farm development has not been prohibited from occurring within AONBs in NI. Paragraph 6.2.2.3 of SPPS outlines the approach for development located within AONBs, stating that a cautious approach should be taken for renewable energy developments in these locations.

In respect of the Sperrin Mountains AONB, the wind farms comprise operational Owenreagh I Wind Farm, operational Owenreagh II Wind Farm and consented Craignagapple Wind Farm. These wind farm developments are all located within the Site Boundary.

AONBs are designated by the Department of the Environment for Northern Ireland (DoENI) and are of national importance. The policy context for AONBs is described in 'Planning Policy Statement 2 Natural Heritage', which states that AONBs are designated "*primarily for their high landscape quality, wildlife importance and rich cultural and architectural heritage*." Policy NH 6 is specifically worded for AONBs, and states that:

"Planning permission for new development within an Area of Outstanding Natural Beauty will only be granted where it is of an appropriate design, size and scale for the locality and all the following criteria are met:

a) the siting and scale of the proposal is sympathetic to the special character of the Area of Outstanding Natural Beauty in general and of the particular locality; and
b) it respects or conserves features (including buildings and other man-made features) of importance to the character, appearance or heritage of the landscape; and
c) the proposal respects:

- *local architectural styles and patterns;*
- *traditional boundary details, by retaining features such as hedges, walls, trees and gates;*
- *and local materials, design and colour."*

Explanatory text for this policy goes on to say the following:

"This policy requires development proposals in Areas of Outstanding Natural Beauty (AONB) to be sensitive to the distinctive special character of the area and the quality of their landscape, heritage and wildlife. The quality, character and heritage value of the landscape of an AONB lies in their tranquillity, cultural associations, distinctiveness, conservation interest, visual appeal and amenity value."

A detailed assessment of the effects of the Development on the special landscape qualities of the Sperrin Mountains AONB will be presented in the LVIA. In the absence of any specific citations or management plans for the Sperrin Mountains AONB, the assessment will take account of the NILCA descriptions for the LCAs that cover the AONB.

Registered Parks, Gardens and Demesnes

Figure 6.4 shows Historic Parks and Gardens overlaid on the scoping layout ZTV. This shows that the closest Registered Garden to the Development is Holy Hill House at approximately 3 km to the north-west, with Moyle House, Beltrim Castle and Barons Court all lying at or beyond 10 km to the south.

The effects on those Registered Gardens contained in the Register of Parks, Gardens and Demesnes of Special Historic Interest will be considered within the Cultural Heritage Chapter of the ES.

Areas of High Scenic Value

Areas of High Scenic Value (AoHSV) are the local landscape designation used by the Council. There are three AoHSVs within 20 km of the Development, covering both banks of the Foyle north of Derry, both banks of the Foyle south of Derry and Faughan Valley south-east of Drumahoe to Burntollet Bridge. The effects on these AoHSV will be considered in the LVIA.

6.5 Visual Receptors and Visual Amenity

The LVIA will undertake an assessment of the likely visual effects of the Development through consideration of the specific visual effects at a selection of representative

viewpoints and by considering the wider effects on visual amenity with reference to principal visual receptors. Representative viewpoints and principal visual receptors are shown in conjunction with the scoping layout ZTV in Figures 6.2 and 6.5 respectively.

6.5.1 Visualisations

Visualisations and figures will be produced to NatureScot's standards as set out in *'Visual Representation of Wind farms: Version 2.2'* (February 2017)[58]. In the absence of the equivalent statutory bodies producing such guidance in Northern Ireland, England or Wales, this guidance is used in the production of wind farm visualisations in all parts of the UK. In line with NatureScot guidance, it is proposed that photomontages will be prepared for viewpoints where they are located within a 20 km radius of the outermost turbines.

6.5.2 Viewpoint Selection

A preliminary viewpoint list is shown in Table 6.2 below, along with the visual receptors they represent and the landscape designations in which they occur. The locations of the viewpoints are shown in Figure 6.2, and have been based on the viewpoints previously included in the consented Craignagapple LVIA. The final list for the Development will be established through fieldwork and the scoping process and in agreement with the Council and Statutory Consultees. The viewpoints were selected to represent sensitive visual receptors with the potential to undergo significant effects. They were also selected to represent landscape receptors and with consideration of the potential for cumulative effects to arise.

Agreement from the Council and Statutory Consultees to the proposed scope for the LVIA is sought through this scoping exercise in order to enable the LVIA to be focussed on key considerations.

Table 6.2: Preliminary Viewpoint List

ID	Viewpoint name	Irish National Grid (ING) ref. (Preliminary)		Dist. nearest turbine (km)	Receptors represented / Landscape Designations
1	Koram Road, Ligfordrum.	241120	394825	1.77	Residents / Road-users
2	Koram Road, north of Ligfordrum.	241136	395226	1.37	Residents / Road-users
3	Napple Road, Ballykeery Bridge.	245457	396044	1.43	Road-users
4	Moor Lough picnic area.	244565	398524	1.62	Visitors / Anglers
5	Holyhill Road, Holly Hill	238190	398696	3.81	Residents / Road-users
6	President Wilson's House	236998	396396	4.37	Residents / Visitors
7	Strathmourne Road, Strabane	233995	395615	7.43	Road-users / Workers
8	Victoria Bridge	235260	390207	2.96	Residents / Road-users
9	Harry Avery's Castle, Newtownstewart	239137	385233	11.47	Visitors

[58] Scottish Natural Heritage (2017). Visual Representation of Wind Farms: Version 2.2.

ID	Viewpoint name	Irish National Grid (ING) ref. (Preliminary)		Dist. nearest turbine (km)	Receptors represented / Landscape Designations
10	Slievebeg Road, Slievebeg	248704	389178	8.58	Residents / Road-users
11	B48 Ballynamallaght	247728	400126	4.86	Residents / Road-users
12	B48 Dunnamanagh	244491	402605	5.55	Residents / Road-users
13	Lenamore picnic site, above Gortin	250728	484128	13.88	Visitors
14	Ulster Way at Bolaght Mountain above Castlederg	227335	377800	23.15	Walkers
15	Foreglen Road, Killaloo	252286	309420	14.94	Residents / Road-users
16	A5, Strule River Valley	241796	381631	14.35	Residents / Road-users
17	Bells Park Road, Glebe	232064	393207	9.89	Residents / Road-users
18	Mullaghclogha, Sperrin Mountains	255668	395580	11.49	Walkers
19	Ballindrait	230548	399653	11.24	Residents / Road-users
20	Meendamph Road, Crockrour Hill	245980	395433	2.20	Residents / Road-users
21	Glenmornan	241438	399505	2.44	Residents / Road-users

6.6 Residential Visual Amenity Assessment

While effects on individual properties will not be assessed in this LVIA, those that lie within a 2 km radius of the Development will be included in the RVAA. The RVAA will be prepared in accordance with the Landscape Institute's Technical Guidance Note 2/19 'Residential Visual Amenity Assessment' (RVAA)[59]. This guidance sets out the 'Steps' to be followed when undertaking a RVAA and highlights how it should be informed by the principles and processes of GLVIA3. The purpose of the RVAA is to identify those properties where the effect of the Development leads to the 'Residential Visual Amenity Threshold' being reached or, in other words, where the effect could be described as overwhelming or overbearing. The Study Area is set at a 2 km radius in line with the maximum radius recommended in the technical guidance. The RVAA will consider the effect on views from each property, as well as views from the associated garden grounds and access tracks.

6.7 Potential Effects of Turbine Lighting

A key factor in the development of turbines greater than 150 m in height is the likely requirement for them to have visible red, medium intensity (2,000 candela) lights fitted to turbines in accordance with CAA guidance. There is also the requirement for low intensity (32 candela) lights to be fitted on a select number of the turbine hubs. The details of the

[59] The Landscape Institute (2019). Technical Guidance Note 2/19 'Residential Visual Amenity Assessment'

lighting requirements for the Development are currently being defined along with potential mitigation measures.

OPEN will, if required, prepare a night-time impact assessment section and visualisations illustrating turbine lighting at night, for inclusion in the LVIA. The hub height ZTV will be used to identify where there would be direct line of sight of the lights from the surrounding area. OPEN has undertaken night-time lighting assessments and visualisations for several other wind farm projects in the UK which will inform the approach to the assessment of turbine lighting and the basis of our professional judgement about the level of effect arising from the proposed lighting.

In order to inform this assessment, OPEN will take photographs from three of the readily accessible viewpoints at dusk (photographs to be taken after the period of civil twilight) and will prepare visualisations to represent the effects of lighting on these views. It is proposed that the following three viewpoints be used to represent the effects of night-time lighting:

- Viewpoint 4: Moor Lough picnic area;
- Viewpoint 5: Holyhill Road, Holy Hill; and
- Viewpoint 21: Glenmornan.

These have been selected to represent the effects on road-users and residents in this local area who would be most likely to be affected. In the absence of any NI guidance, night-time visualisations will be in accordance with NatureScot guidance.

6.8 Key Sensitivities

- Potential effects on local landscape character, including cumulative effects, particularly on the host Sperrin Mountains LCA, as well as Sperrin Mountains Foothills LCA to the north and Foyle Valley LCA to the south and west;
- Potential effects on the special landscape qualities of the Sperrin Mountains AONB;
- Potential effects on Holy Hill House HPG;
- Views from sensitive visual receptors including from nearby routes and settlements across the Sperrin Mountains and along the Foyle Valley;
- Views from sensitive visual receptors on surrounding hill tops and lough sides;
- Potential effects on residential visual amenity from close range residential properties, garden grounds and access tracks;
- Cumulative effects on sensitive landscape and visual receptors especially within the Sperrin Mountains AONB; and
- Visibility of the Development at night due to turbine lighting.

6.9 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q6.1: Do consultees have any comments on the proposed methodology?

Q6.2: Are consultees in agreement with the proposed 30 km Study Area?

Q6.3: Are consultees in agreement that the assessment of the effects on landscape character receptors should focus on those LCAs which are highlighted as being relevant to the LVIA in Table 6.1?

Q6.4: Are consultees in agreement that the assessment of the effects on landscape designations should focus on the Sperrin Mountains AONB?

Q6.5: Do consultees have any comments or suggestions in relation to the Preliminary Representative Viewpoint Locations shown in Table 6.2 and illustrated on Figure 6.2?

Q6.6: Do consultees have any comments on the acceptability of the proposed turbine tip height of 180 m?

Q6.7: Do consultees have any comments on the approach to assessing the effects of turbine lighting?

Q6.8: Do consultees have any comments or suggestions on the approach to cumulative landscape and visual assessment?

7 ORNITHOLOGY

7.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Ornithology Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those ornithological receptors to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

The assessment will be undertaken in line with best practice and relevant European and national legislation, policy and guidance.

7.2 Study Area

The ES will consider the following ornithological Study Areas[60]:

- Designated sites – source-receptor distance will be investigated based on core foraging ranges for Qualifying Interests for SPAs and Ramsar sites (as per SNH,2016)[61], with potential hydrological connectivity traced to end point receptors, i.e., Lough Foyle SPA and Lough Foyle Ramsar site;
- Collision modelling – for target species the results of the flight activity surveys will be used to generate outputs from the collision model, as required following methodology detailed in in SNH (2000)[62] and Band *et al*. (2007)[63]. The analysis will be conducted using flight line data falling within a 500 m buffer of proposed turbine locations and flight times will be weighted appropriately to account for overlapping viewsheds (as per SNH (2017)[64]);
- Breeding raptors, in particular hen harrier and merlin – 2 km Study Area (SNH, 2017);
- Breeding waders – 800 m (max) depending on species;
- Winter roosts for raptors (hen harriers) – 2 km Study Area (SNH, 2017);
- Wintering waterbirds, in particular winter geese and swans – foraging areas within 500 m and roosting sites within 1 km (SNH, 2017);
- Cumulative assessment – 15 km initial assessment area, with hydrological connectivity traced to potential sensitive end point ornithological receptors; and,
- In-combination assessment – required as part of the Habitats Regulations Assessment (HRA) process. SNH 2017 guidance will be consulted to identify an appropriate Study Area per species scoped into the assessment.

7.3 Assessment Methodology

The assessment method will follow the process set out in the relevant provisions of the EIA Regulations and guidance on implementation of the Birds and Habitats Directive.

7.3.1 Methodology for Assessing Ornithological Features

Two years of surveys (April 2018 – March 2020) have been carried out. All followed recommended guidance as detailed in SNH (2017) and cover the Ornithological Interests detailed in Table 7.1.

[60] Please note 'survey area' is defined as the area covered by each survey type at the time of survey whereas 'study area' is defined as the area of consideration of potential effects on each species at the time of assessment.

[61] Scottish Natural Heritage (2016) Assessing connectivity with Special Protection Areas. SNH Guidance Note.

[62] Scottish Natural Heritage (2000). Windfarms and Birds - *Calculating a theoretical collision risk assuming no avoiding action*. SNH Guidance Note.

[63] Band, W., Madders, M., & Whitfield, DP., (2007). Developing Field and Analytical Methods to Assess Avian Collision Risk at Wind Farm Sites. In: de Lucas, M., Janss, G. & Ferrer, M. (Eds) 2007. Birds and Wind Farms – Risk Assessment and Mitigation. *Quercus Editions*, Madrid, 259-279

[64] Scottish Natural Heritage (2017) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms

Table 7.1: Scope of surveys

Survey	Survey Period	Survey Buffer (from Developable Area[65])
Breeding vantage point surveys	March / April – August	500 m
Wintering vantage point surveys	September – March	500 m
Upland breeding bird surveys	March / April - August	Employing a modified Brown & Shepherd, approach) all species particularly curlew (up to 800 m), red grouse, merlin, golden plover within 500 m survey buffer
Wintering walkover surveys	September – March	All species, 500m
Breeding priority species surveys	During March / April - August	2 km for breeding raptors
Breeding raptor surveys	During March / April - August	As per Hardey *et al.* (2009)[66], focusing on merlin and hen harrier – suitable habitat within 2 km.

The environs of the existing Development were also surveyed by Woodrow Environmental Consultants (Woodrow) to inform Further Environmental Information (FEI) submitted for planning in support of the consented Craignagapple Wind Farm (Planning Reference: J/2010/0481/F) from May to October 2016.

7.3.2 Methodology for Ornithological Impact Assessment (OIA)

The ES will include an Ornithological Impact Assessment (OIA). This will consider the potential direct, indirect and cumulative effects that the construction and operation of the Development could have on ornithology. It will also consider the potential effects on statutory designated sites. The OIA will be supported by a technical appendix that will include all outputs from any collision modelling.

Effects on potential Important Ornithological Features (IOFs) will be assessed in relation to the species' reference population, conservation status, range and distribution. The assessment of potential effects will follow guidelines published by CIEEM (2018)[67], SNH (2017) and those detailed in Percival (2003)[68].

The assessment involves the following process:

- Identification of the potential effects of the Development;
- Consideration of the likelihood of occurrence of potential effects where appropriate;
- Defining the Nature Conservation Importance (NCI) and Conservation Status of the bird populations present to determine overall sensitivity;
- Establishing the "magnitude of change" and "significance of effect" (both spatial and temporal);

[65] The part of the Site where turbines may be located.

[66] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2009). *Raptors: a field guide for surveys and monitoring*. Stationery Office, Edinburgh

[67] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

[68] Percival, S. M. 2003. Birds and wind farms in Ireland: A review of potential issues and impact assessment. Ecology Consulting, Coxhoe, Durham

- Based on the above information, a judgement is made as to whether or not the identified effect is significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, measures to mitigate or compensate the effect are suggested where required;
- Opportunities for enhancement are considered where appropriate; and
- Residual effects after mitigation, compensation or enhancement are reported.

NCI, as per Percival (2003), is defined on the basis of the geographic scale, and it is necessary to consider alongside each feature's conservation status, its distribution and its population trend based on available historic records, to provide an overall level of sensitivity.

The significance of potential effects is determined by integrating the sensitivity and magnitude in a reasoned way.

A set of pre-defined significance criteria will be used in assessing the potential effects of the Development. It is necessary to establish whether there will be any effects which will be sufficient to adversely affect the feature to the extent that its conservation status deteriorates above and beyond that which would be expected should baseline conditions remain (i.e., the 'do nothing' scenario). Furthermore, these predictions will be given with a level of confidence relative to the effect being assessed where required (in line with CIEEM (2018).

This project will be screened for Habitats Regulations Assessment (HRA) to ensure that it is in line with the requirements of the Habitats and Birds Directives, as well as NI legislation.

7.3.3 Main Sources of Information

The following information sources (including assessment for the potential of transboundary effects within RoI) are being consulted:

- DAERA Protected Areas[69];
- NIEA Natural Environment Map Viewer[70];
- Department for Infrastructure (DfI) Planning[71];
- Ramsar Sites Information Service[72];
- National Parks & Wildlife Service, Department of Housing, Local Government & Heritage, RoI – NPWS Designation Viewer[73];
- Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller R.J. (2013). Bird Atlas 2007–11: The Breeding and Wintering Birds of Britain and Ireland. BTO, Thetford;
- BirdWatch Ireland (2010). Action Plan for Upland Birds in Ireland 2011-2020;
- BirdWatch Ireland's Group Action Plans for Irish Birds. BWI, Kilcoole, Co. Wicklow;
- Crowe, O., Musgrove, A.J. & O'Halloran, J. (2014). Generating population estimates for common and widespread breeding birds in Ireland. Bird Study 61(1): 82-92;
- Gibbons, D. W. (1993). New Atlas of Breeding Birds in Britain and Ireland (1988–91);
- Hutchinson, C. D. (1989). Birds of Ireland. T. & A. D. Poyser;
- Lewis, L. J., Coombes, D., Burke, B., O'Halloran, J., Walsh, A., Tierney, T. D. & Cummins, S. (2019a) Countryside Bird Survey: Status and trends of common and

[69] Department of Agriculture, Environment and Rural Affairs (DAERA) Protected Areas (Undated) Available at: https://www.daera-ni.gov.uk/landing-pages/protected-areas

[70] Department of Agriculture, Environment and Rural Affairs (DAERA) NIEA Natural Environment Map Viewer (2020) Available at: https://appsd.daera-ni.gov.uk/nedmapviewer/

[71] Department for Infrastructure (DfI) (Undated) Available at: Planning | Department for Infrastructure (infrastructure-ni.gov.uk)

[72] Ramsar Sites Information Service RSS 2.0 (Undated) Available at: https://rsis.ramsar.org/

[73] National Parks & Wildlife Service (NPWS) Designations Viewer (Undated) Available at: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba

widespread breeding birds 1998-2016. Irish Wildlife Manuals, No. 115. NPWS, Department of Culture, Heritage and the Gaeltacht, Ireland;
- Mc Guinness, S., Muldoon, C., Tierney, N., Cummins, S., Murray, A., Egan, S. & Crowe, O. (2015). Bird Sensitivity Mapping for Wind Energy Developments and Associated Infrastructure in the Republic of Ireland; and
- Sharrock. J.TR. (1976). The Atlas of breeding Birds in Britain and Ireland.

7.4 Baseline Conditions / Initial Findings (desk-based/survey)

Historic ecological data collected to inform the original planning application at the Development is being reviewed as part of the baseline to inform this EIA.

Two consecutive years of Ornithological surveys commenced at the Site in April 2018.

To date, completed data sets have been collected for collision risk assessment and avian distribution for the 2018 and 2019 breeding seasons and the 2018-19 and 2019-20 Non-breeding season surveys.

Additional breeding bird surveys of the Site commenced in March 2021 and will conclude in August 2021.

7.4.1 Birds – Main Findings

Based on the findings from 2018 and similarly in 2019, the main breeding season constraint for developing this Site is currently considered to be management for breeding Red Grouse *Lagopus lagopus hibernicus* and Snipe *Gallinago gallinago*.

In 2018, merlin attempted to breed in the wider area just beyond the 500 m turbine buffer, although no exact nesting location has been confirmed. Observed behaviour in relation to the operational turbines at Owenreagh I and within the Craignagapple Extension area, suggests merlin have become habituated to the existing array. Merlin are also regularly recorded foraging within and adjacent to the Site. The activity of this species on the Site is continually reviewed during the surveys.

Surveys have recorded foraging peregrine. There is no suitable breeding habitat within the zone of influence of the Site (2 km turbine buffer). Buzzard breed in the wider area and regularly forage / commute through the Site. Buzzards and peregrines are a green listed species[74]).

As can be seen in Table 7.2, aside from buzzard, flight lines for target species have been recorded at a low frequency.

Approximate Vantage Point (VP) locations referenced in the table below[75] are as follows in ING:

- VP 1 – X (243715) Y (398029) – North of the Site;
- VP 2 – X (242003) Y (397257) – East of the Site;
- VP 3 – X (244229) Y (395844) – South of the Site; and,
- VP 4 – X (242046) Y (395460) – West of the Site.

[74] Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544

[75] Location points are visible here at Grid reference Finder (2011): https://irish.gridreferencefinder.com?gr=H4371198011|Vantage_s_Point_s_1|1,H4199997239|Vantage_s_Point_s_2|1,H4422595826|Vantage_s_Point_s_3|1,H4204295442|Vantage_s_Point_s_4|1&v=r (Accessed July 2021).

Table 7.2: Notable species recorded within or in close proximity of the Site (including Target Species)

Species	BoCCI[76] Status	Status at site
Whooper swan	Amber[Br. & Wn.]	Single record of 2 birds commuting through the Site
Red Grouse	Red[Br.]	Small number of observations including flight, calling and flushing (particularly on bog in proximity of existing substation). Signs of grouse (pellets) are regularly encountered on route to VP locations.
Buzzard	Green	There has been no evidence of breeding within the site or 500 m buffer and birds were recorded hunting or commuting through the area, with breeding confirmed in the 2 km turbine buffer.
Hen harrier	Amber[Br.]	Birds have been recorded foraging through the Site on three dates over the two-year study, including a record in May 2019.
Sparrowhawk	Green	Small number of flight observations within the Site.
Peregrine falcon	Green	Small number of flight observations within the Site - no suitable nesting habitats (cliff/building) within the Site or environs and records likely to be non-breeding birds or breeding birds travelling significant distances from nest sites.
Kestrel	Red[Br.]	Small number of flight observations within the Site - possibility of prospecting for nest site in shelter belt near VP 1.
Merlin	Amber[Br.]	Small number of flight observations within the Site - possibly holding a breeding territory in forestry plantation on the southwestern boundary outside of the Site. No breeding locations have been identified to date in 2021.
Golden plover	Red[Br. & Wn.]	Small number of flight observations within the Site in springtime, likely to be birds on passage - typically small flocks recorded (< 60 birds). In April 2018 birds were recorded on the ground utilising the wetter bog between VP 3 and sub-station. Recorded more regularly over 2019-20, with flocks regularly observed foraging/loafing on the blanket bog near the top hill within 80-190 m of the existing turbine array.
Curlew	Red[Br. & Wn.]	On 19 April 2018 birds were heard calling well south of the Site from an area where breeding Curlew were recorded in 2017 - after this date no curlew were recorded and the breeding area was vacant during the 2018, 2019 and 2021 seasons. This area lies >900 m outside of the current Site Boundary to the south-east.
Snipe	Red[Br. & Wn.]	Small number of flight observations within the Site - more regularly flushed on route to VPs and territorial (chipping) birds recorded around VPs 1, 3 & 4.
Great black-backed gull	Green	Small numbers of flights recorded, likely to be related to birds scavenging for after-birth associated with lambing. Previously Amber list in BoCCI (2014-2019) the conservation status of this species has been downgrade to Green listed in BoCCI (2020-2026).

[76] Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544

7.4.2 Game birds

Based on walkover data and birds heard calling during Vantage Point (VP) watches there is at least one pair of red grouse holding a territory adjacent to the Site, with possibly a second territory also bordering and even incorporating the current site. Relatively low breeding density are typical for the north-west of Ireland and the Site would not be expected to support more than three to four pairs in its current state.

During the breeding season the majority of grouse registrations (flushed birds), calling birds and signs (pellets) have been recorded in the vicinity of VP 3, which correlates with some of the denser areas of heather within the Site. Grouse activity has also been noted from the southern slopes around VP 4. Significant sections on the northern slopes of the Site have been burnt in recent years, and this is likely to have adversely affected the amount of cover for nesting grouse; as well as possibly explaining the low number of registrations from this area. No grouse have been recorded in the northern part of the Site, despite the occurrence of extensive areas of heath and bog, including dense heather cover south of Moor Lough. It has been reported that red grouse are actively hunted in this area and this may explain the low levels of recorded abundance.

Flight-lines detected for red grouse during VP watches were very low, as it is almost exclusively a ground dwelling species; and flights when observed (usually flushed birds) are typically low (< 20 m). As such, red grouse are not generally thought to be at risk of collision with wind turbines. However, the trend in turbine dimensions is for the extension of blade length closer to ground level, which may increase the risk to species such as red grouse in certain locations.

7.4.3 Raptors

As reviewed in Madder & Whitfield (2006)[77] it is acknowledged that the standard VP watch methodology that is generally applied for wind farm assessments, can result in under detection for some species, including merlin. This may explain the relatively low number of flight-lines recorded during VP watches; as merlin were encountered more regularly within or adjacent to the Site if walkover and non-survey records are considered. However, the VP methodology is intended to feed into collision risk assessment, with walkover, and other, surveys adding contextual information that can be taken account of in assessing impacts such as disturbance and displacement. In 2018, a possible breeding territory was identified adjacent to the Site, in the plantation to the south-west which lies just outside of the Site. On 18th May 2018 a merlin was observed exhibiting territorial behaviour and was repeatedly mobbing a buzzard over the plantation. Dedicated VPs and walkovers to cover this area in 2018 failed to pinpoint a nesting location and no further breeding behaviour was observed. No breeding behaviour was detected in 2019 and a fire on the Site may have influenced occupancy. Over the winter, merlin will tend to move to lower ground, such as estuaries; although birds can maintain contact with their breeding season home ranges. A female merlin was picked up hunting through the Site on a walkover in December 2018; and interestingly, the bird was chasing a meadow pipit up the track directly under the existing turbines.

Hen harriers have been recorded on three dates, with a ringtail, adult male and a sub-adult male observed foraging through the Site. One of the observations was recorded during the breeding season. However, no breeding sites have been recorded in the wider area during this study. There is potential suitable nesting cover available in the wider area, and even the heather in parts of the Site was considered dense enough to support moorland (as opposed to plantation) nesting birds. Desktop records from Balmer *et al.* (2013[78]) indicate no historical records of breeding within the 10km squares for this Site. The closest known

[77] Madder & Whitfield (2006). Upland raptors and the assessment of wind farm impacts. IBIS 148:1 43-56

[78] Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S. & Fuller R.J. (2013). *Bird Atlas 2007–11: The Breeding and Wintering Birds of Britain and Ireland*. BTO, Thetford.

breeding sites are in Sperrin and Pettigo uplands surrounding the vicinity of Craignagapple / Owenreagh to the south and east.

Buzzards are the most commonly recorded raptor within the Site. No breeding sites have been detected within the Site or 500 m buffer and the availability of suitable nesting habitat (woodland) is limited to a small number of shelter belts. A possible Buzzard nest site was identified in a small plantation / shelter belt south of VP 4 in 2018, beyond the 500m turbine buffer. In 2017, breeding was confirmed in a small plantation to the east of the Site and beyond the 500m turbine buffer.

A small number of sparrowhawk, peregrine and kestrel flight-lines were recorded during VP watches. A male kestrel may have been prospecting for a nest site in shelter belt near VP 1; however, this location was not occupied. While not regularly recorded during VP watches, peregrines were recorded during walkovers and during merlin surveys. This is interesting as there is no suitable nesting habitats (cliff / building) within the Site or environs. As such, records are likely to be non-breeding birds or breeding birds travelling significant distances from nest sites. For some of the observations associated plumage notes recorded brown colouration, which would be suggestive of immature birds.

7.4.4 Waders & other wetland birds

In terms of flight lines and numbers golden plover were the most commonly recorded species of wader. No breeding attempts were detected and the habitat quality beyond the current site was considered of moderate to low quality for this species – being relatively rank or dense heather. There appears to be a small wintering flock that often flies into the site from the direction of the Foyle Estuary, with numbers in flocks ranging from *c.* 10 to 160 birds. The flocks typically fly around the existing turbine array (often around the summit of Owenreagh Hill) and land within the Site. Walkover surveys confirmed that the ridge running up from the sub-station to the top of Owenreagh Hill is a favoured foraging / loafing area. There was no indication that golden plover numbers are swelled significantly by birds on passage, which not being familiar with the current site may avoid Owenreagh Hill.

Two possible pairs of curlews exhibiting breeding display flights were recorded well south of the Site (>900 m to the south east) early in the 2017 breeding season, however these birds did not persist for the whole season. During the 2018 breeding season curlew were only heard on one occasion (19 April 2018). After this date no curlew were recorded and the breeding area was vacant during the 2018 season, and likewise during the 2019 breeding season no curlew activity was recorded. The area has not been found to be occupied by curlew during the 2021 season.

Snipe were the only wader species breeding within the Site and territorial birds (chipping) were recorded from wetter areas adjacent to VP 1, VP 3 and VP 4, with the bog between VP 3 and the sub-station holding the highest densities. Across the Site as a whole, breeding densities were relatively low, reflecting the predominately free draining nature of the Site resulting in a patchy breeding distribution for this species which selects wetter breeding sites. However, it is important to note that the drought conditions experienced over the 2018 breeding season were likely to have caused snipe to abandon breeding attempts due to drying out of suitable wetter areas. Snipe are not considered a species at risk from collisions with turbines, however changes in water levels due to construction activities could impact on the current distribution of snipe at the Site. Snipe over winter on the Site in higher numbers and are regularly flushed on walkovers, especially during passage months. The mosaic of hummocky pools and bog along the ridge running down to the substation from the top of Owenreagh Hill was notably popular, with birds often picked up along the track.

There were very few other wetland species recorded, including two whooper swans on one occasion and the occasional observations of mallard, a species which was upgraded from

the Green to Amber list by BoCCI (2020-2026). Moor Lough to the north of the site was not found to support any significant numbers of waterbirds, probably due to the Lough being highly managed for angling with vehicle access provided to all parts of the shore.

7.4.5 Gulls

There have been very few observations of gulls within the Study Area, with small numbers recording commuting infrequently through the Site, including great black-backed gulls and lesser black-backed gulls. It was noted that birds were probably commuting between lowland pastures to scavenge on the after-birth associated with lambing.

7.5 Key Sensitivities

Two full years of survey data have been collected for the 2018 and 2019 breeding seasons and the 2018-19 and 2019-20 Non-breeding season surveys.

Breeding bird surveys have also been conducted across the Site in March – August 2021.

Identified Key Ornithological Sensitivities at this stage are considered to be:

- Breeding / resident red grouse;
- Breeding snipe – low density population;
- Winter golden plover – small flocks (10 to 160 birds) utilising the Site, appearing to be habituated to the current site; and,
- Merlin breeding within/adjacent to the 500 m turbine buffer.

7.6 Potential Effects Assessment

7.6.1 Scoped in Effects

Displacement of breeding snipe due to operational turbines (estimated c. 50% decline in breeding density within 400 m of turbines). In addition, construction of onsite drainage around infrastructure may lead to a reduction in wet habitats used by nesting snipe.

Effects of wind farms on red grouse are generally considered neutral (Pearce-Higgins *et al.*, 2012[79], Pearce-Higgins *et al.*, 2009[80]; Douglas *et al.*, 2011[81]), although the industry trend of lowering the rotor swept area may introduce a level of collision risk for this species. There are also reports of birds flying into turbine towers (Stokke *et al.*, 2020)[82] and any new fencing around wind farm infrastructure has the potential to introduce further collision risk factors.

Outputs from collision risk model for golden plover are likely to generate predicted collision rates that appear relatively high. However, considered at an All-Ireland population level (80,707 wintering birds)[83], additional predicted mortality due to collisions is unlikely to exceed a low magnitude of effect. Applying an annual adult survival rate of 0.73 (Sandercock, 2003; as cited by Robinson, 2005 in BTO BirdFacts)[84], it is estimated that the

79 Pearce-Higgins, J.W., Stephen, L., Douse, A. & Langston, R.H.W. (2012). Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology*, 49, 386–394.

80 Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. (2009). The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology*, 46, 1323–1331.

81 Douglas, D.J.T., Bellamy, P.E. & Pearce-Higgins, J.W. (2011). Changes in the abundance and distribution of upland breeding birds at an operational wind farm. *Bird Study*, 58, 37–43.

82 Stokke, B.G., Nygård, T., Falkdalen, U., Pederen, C. & May, R. (2020). Effect of tower base painting on willow ptarmigan collision rates with wind turbines. *Ecology & Evolution* 10:12.

83 Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019b). Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16. *Irish Wildlife Manuals*, No. 106. NPWS, Department of Culture, Heritage and the Gaeltacht, Ireland.

84 Sandercock, B.K. (2003). Estimation of survival rates for wader populations: a review of mark-recapture methods. Wader Study Group Bulletin 100:163-173. As published on http://www.bto.org/birdfacts - BTO BirdFacts | Golden Plover, (accessed on 06-May-2021) citation: Robinson, R.A. (2005) BirdFacts: profiles of birds occurring in Britain & Ireland. BTO, Thetford.

number of collisions required to produce a 1% increase over baseline mortality would be 218 collisions/annum based on the Irish winter wintering population.

Displacement of breeding merlin due to operating turbines. Collision risk with wind turbines is considered relatively low for this species. New fencing around infrastructure may pose a higher collision risk; as well as displacement effect by potentially fragmenting foraging habitats.

7.6.2 Scoped Out Effects

It is considered that there is no potential for breeding peregrine at the Site or within a potential disturbance distance given the lack of suitable nesting opportunities for this species.

Collision risk can be discounted for a number of target species due to notably low flight times within the 500m turbine buffer, for example, peregrine and whooper swan.

7.7 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q7.1: Given the relatively benign nature of the Site to date in terms of ornithological survey results, are NIEA satisfied that sufficient information has been gathered by using the 2 consecutive years of data from 2018 – 2019-20, as well as conducting a repeat of the breeding bird surveys from March to August 2021 to inform the EIA? Do NIEA wish to see winter bird surveys repeated in 2020/2021? Are NIEA satisfied with the proposed methodology for ornithological survey and approach for impact assessment?

Q7.2: Do NIEA have any information that would be useful in the preparation of the Ornithological assessment, for instance, relevant species records for the area, and / or relevant NIEA research / updates on monitoring of similar projects?

8 ECOLOGY

8.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Ecology Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those ecological interests (excluding birds which is dealt with in Section 7: Ornithology) to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

Previous surveys results recorded at the Site have informed the proposed scope of works within this Section.

8.2 Study Area

The Ecology Study Area comprises the Site and surrounding area. Survey and Desk Study areas vary according to the habitats and species and are based on recommended guidance for a particular feature of interest (as per resources such as CIEEM Competencies for Species Survey (CSS)[85], NIEA Site Survey Specifications[86]).

The importance of the habitats and species present is evaluated using the CIEEM 2018 guidance document[87]. This document outlines an accepted approach for the evaluation of potential impacts from such developments.

The zone of influence (ZoI) of a development is the area over which ecological features may be subject to biophysical changes as a result of the proposed development and associated activities. The ZoI may vary according to a features' sensitivities to environmental change, as well as the scope of works associated with a development (CIEEM, 2018). Direct impacts resulting from the Development are likely to be limited to the loss of existing habitats and/or species within the proposed working areas (including for turbine locations, access routes, associated welfare facilities, substation, grid and haul route connections), in addition to effects on aerial species such as birds and bats as a result of potential for collision risk. Indirect impacts of the Development are likely to be broader, and may include disturbance of wildlife by construction related activities or operation of the Development, and the potential for changes to hydrology affecting habitats in the area surrounding the Development and further afield (depending on the impacts and the opportunities for mitigatory actions / habitat restoration and enhancements).

Initially an area of 2 km radius of the Site will be interrogated for biological records (including 10 km for bat species records) from local databases, and sites of local nature conservation importance; while all nationally and internationally designated sites within a 15 km radius of the Site will be initially considered as being potentially within the ZoI of the Development. The ZoI of a development is dependent upon other factors, for example the sensitivity and range of specific features, and the extent of biological connectivity with the Site. As such, where any potential is considered to exist for effects further afield i.e., past 15 km (e.g., via downstream affects), where identified this will also be considered.

The potential for any likely effects upon the UK National Sites Network and / or transboundary effects on the Natura 2000 Network (i.e., European Sites) will be assessed separately to the EIA, within a Habitats Regulation Assessment (HRA) screening for the Development. The HRA process is intended to assist the Competent Authority in making a

[85] CIEEM (n.d.) Competencies for Species Survey (CSS). Available at: https://cieem.net/resource/competencies-for-species-survey-css/

[86] DEARA (n.d.) Site Surveys. Available at: https://www.daera-ni.gov.uk/articles/site-surveys

[87] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, published by the Chartered Institute of Ecology and Environmental Management.

determination in relation to the potential for adverse effects upon the integrity of any European Sites as a result of the Development.

8.3 Assessment Methodology

In addition to formal EIA Scoping, early and thorough consultation with stakeholders is a key element in the assessment process. NIEA NED will be engaged to discuss preliminary survey results and key constraints where necessary, whist ensuring that statutory consultees are kept informed about the nature of the proposal.

In order to augment baseline data and, if necessary, refine the survey scope, recent records (within 10 years) of protected and / or notable species and details of sites of ecological interest will be sought through biodiversity data centres such as the 'Centre for Environmental Data and Recording' (CEDaR), the 'National Biodiversity Data Centre' (NBDC) database and from 'Northern Ireland Bat Group' (NIBG).

Initially an area of 2 km radius of the Site will be interrogated for up-to-date biological records (including 10 km for bat species records) from local databases, and sites of local nature conservation importance (information shall be sought from the District Council); while all nationally and internationally designated sites, initially within a 15 km radius of the Site, will be considered as being potentially within the ZoI of the Development. The zone of influence of a proposal is dependent upon other factors, for example the sensitivity and range of specific features, and the extent of biological connectivity with the Site.

Information on areas designated for their ecological features within 15 km of the site shall be obtained, and the potential for connectivity with the Site will be assessed using available datasets and professional judgement (resulting from adjoining watercourses or those in close proximity to the Site). The most current shapefiles of designated areas in Northern Ireland, including Areas of Special Scientific Interest (ASSIs), Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) will be downloaded from the NIEA website and imported onto ArcGIS.

The assessment methodology will follow ecological impact assessment guidance as outlined in CIEEM 2018, including referencing key publicly available sources of ecological information for Northern Ireland e.g., NIEA Natural Environment Map Viewer[88].

8.3.1 Habitats

JNCC Phase 1 Habitat survey[89] was undertaken, by Woodrow Sustainable Solutions Ltd., in summer 2018 and updated in summer 2019. Grid Connection and Haul Route JNCC Phase 1 Surveys were conducted in September 2020 and will be updated in 2021. This will cover all areas within the Site. National Vegetation Classification (NVC) surveys will be repeated by Woodrow in 2021 at proposed turbine locations and along access routes, as appropriate.

Micro-siting surveys will ensure that final layout aims to avoid significant impacts on any sensitive habitats i.e., active peat or other NI priority habitats will be avoided as far as possible, with detailed consideration given to their integrity and opportunities for restoration and / or enhancement as a result of the Development.

The habitat survey will be supported by hydrological and soil survey information, to be provided by Arcus, to identify hydrological units across the site (see Section 9: Geology and Peat, and Section 10: Hydrology and Hydrogeology). As per Section 10.2.2 a Hydrological / Hydrogeological walkover survey to visually appraise the hydrological regime, including an appraisal of drainage channels and initial subsurface water depths in areas identified as active peat will be conducted by Arcus. The initial hydrological surveys will be undertaken alongside an Engineer/Geologist and Ecologist to ensure consistency of approach regarding

[88] NIEA (2021) Natural Environment Map Viewer. Available at: https://appsd.daera-ni.gov.uk/nedmapviewer/

[89] JNCC (2016) Handbook for Phase 1 habitat survey - A technique for environmental audit.

peat. This will ensure team work in unison to build up a more detailed picture of the site. By coinciding the initial collection of soil, hydrology and habitat data, there is the potential to more accurately identify where the more sensitive habitats arise, such as intact units of active peat which might exist across this mosaic upland Site.

8.3.1.1 Active Peat (habitat) Assessment

In recognition of the high level of protection afforded to active peatland in the Department of the Environment's 'Planning Policy Statement 18: Renewable Energy[90]', additional assessments will be undertaken within the footprint of the proposed infrastructure for any habitats that may qualify as 'active peat'. It is acknowledged that the classification of active peat habitats can be quite complex, particularly in disturbed habitats and around the margins of large peatland expanses, so a bespoke classification system has been established for this Development, in line with NIEA Guidance[91]. The first step will involve classifying habitats across the Survey Area into three high level Phase 1 categories, as follows:

- Active peat: these areas support the NVC M19 community, have a peat depth of >1 metre (m), and have intact hydrology;
- Possibly active peat: these areas support modified blanket bog (including drained / oxidised areas on deep peat), wet heath or heath-mire transition habitat, and have peat layers of between 0.5 and 1 m; and,
- Not active peat: these areas do not support heath or bog vegetation, and have a peat depth of <0.5 m.

Further assessments and fine-scale mapping will be undertaken within the 'possibly active peat' zone, based on the presence of indicator plant species, the depth of the underlying peat layer, and the hydrological condition of the peatland unit (measured using dipwells – as discussed in Section 10).

Active Peat

It has been recognised that the design of the Development is likely to be influenced by the presence of active peat, protected by European Union (EU) directive (Directive 2009/28/EC), and transposed into law and planning policy through Article 3 of the Planning (Northern Ireland) Order 1991 and Planning Policy Statement 18, August 2009 by Department of the Environment (DOENI, 2009).

Surveys will aim to ascertain the extent and nature of the active peatlands across the Site and to develop a robust investigative approach in order to best identify these habitat conditions. This approach will inform an enhanced JNCC Phase 1 habitat assessment, along with peat probing (as supported by the soil and hydrological assessments outlined in Sections 9 and 10 respectively) and NVC survey.

The principles of the enhanced Phase 1 habitat study are:

- To collect data that is robust and auditable, and that permits assessment;
- To undertake an assessment of baseline (existing) conditions based on an agreed methodology; and,
- Permit an EIA to be undertaken that appropriately addresses the peat resource, and, allows viable embedded mitigation and good design in relation to active peatlands.

[90] Department of the Environment Northern Ireland (2009). Planning Policy Statement 18: Renewable Energy. Available online at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/Best%20Practice%20Guidance%20to%20PPS%2018%20-%20Renewable%20Energy_0.pdf

[91] NIEA (2012) NIEA, Natural Heritage, Development Management Team Advice Note – Active Peatland and PPS18, 21/11/12. Available at: https://www.daera-ni.gov.uk/sites/default/files/publications/doe/natural-guidance-NIEA-natural-heritage-development-management-team-advice-note-2012.pdf

Enhanced JNCC Phase 1 - Peat Habitat Study Methodology

JNCC Habitat assessment will be updated across the Site. This will inform the initial design proposals. Once the initial proposed location for infrastructure is known, the peat habitat study will largely focus on this area, but with the aim of avoiding areas of sensitive peatland habitats, such as active peat. This survey will aim to secure alternative locations for any infrastructure which might occur within sensitive habitats or hydrological units as informed by the soil and hydrological assessments.

Acknowledging the influence that peat classification will have on design, the peat habitat survey will be completed, and will also inform proposed locations for the NVC assessment to ensure that the proposed design does not impact upon sensitive peat habitat such as active peat, fen / marsh and/or species rich flush.

As described briefly above, this survey will identify:

- **'Likely active peat'** which are those areas that demonstrate indicators attributable to active peat based on the initial NVC assessment; and the following indicators (as per NIEA, 2012):
    - Sphagnum mosses are present;
    - If the surface is spongy underfoot;
    - Deep peat is present (>0.5m);
    - Intact peat is present or the hydrology is still intact;
    - E. vaginatum / E. angustifolium is present in significant quantities with some Sphagnum mosses;
    - The typical range of blanket bog and raised bog species is present as indicated within the interpretation manual; and,
    - There is a hummock and pool topography.
- **'Possibly active peat'** which are areas where the Peat Condition Assessment survey (see Section 9.3.4) and hydrological assessment (Section 10) will supplement the classification process to determine the presence of active peat;
- **'Transitional areas'** where the peat has the potential to be active, but is affected by an existing condition (land use, drainage etc.);
    - This will be supported by information obtained during the Hydrological walkover regarding water table metrics and site condition (as described in Section 10); and,
    - An assessment will be made, informed by the detailed information collated by the Ecologist, Engineer/Geologist and Hydrologist (as per Sections 8 – 10 of this Scoping document) to inform the likelihood of whether the habitat is capable of returning to active peat in the future either through natural succession or following conservation interventions at the Site.
- **'Not active peat'** where the conditions are not suitable for active peat and no evidence is present of peat generation. Including data collected as per NIEA 2012:
    - None or very little Sphagnum mosses present;
    - A significant amount of non-typical bog community species is present as indicated within the interpretation manual e.g., soft rush;
    - There is a mosaic with acid grassland or dry heath;
    - Peat depth is less than 0.5m;
    - The surface is dry and / or the hydrology is severely affected by deep drains; and,
    - There are large areas of bare peat and / or algal mats.

The peat depth assessment will be undertaken following the methodology outlined in Section 9 and Section 10.

Further enhancement to the JNCC Phase 1 will include installation of dip wells and subsequent monitoring allowing assessment of the hydrological characteristics of the active

peat and potentially active peat. Locations for the dipwells will be selected on the basis of peat thickness, phase 1 habitats and presence of any notable surface drainage features.

A number of bog water table metrics indicative of intact bog will be considered in the assessment of areas of active peat, based on relevant literature and professional judgement based on experience of peatland restoration:

- The water table should not be >20 centimetres (cm);
- The water table should not be >10 cm except with the exception of sustained dry conditions; and,
- The water table should normally be sustained within 5 cm of the top of the acrotelm[92].

The approach undertaken at the Site is consistent with the document 'Good Practice During Windfarm Construction' produced by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency (SEPA), Forestry Commission Scotland and Historic Environment Scotland, (Scottish Renewables *et al.*, 2015).

8.3.2 Bats

8.3.2.1 Bats – Static and Transect Surveys

Bat activity surveys (transects and static bat detector surveys) were conducted on a monthly basis at the site from May to October 2018.

The bat activity transects and static bat activity surveys were then continued in 2019 in accordance with new Scottish National Heritage Guidance (SNH, 2019[93]) in relation to onshore wind farms, with static detector surveys being carried out during May, July, August and October 2019 to ensure good coverage of the Site across the activity season. A bat casualty survey protocol was also followed in 2020 (in line with SNH guidance and as agreed with NIEA NED). The latter survey will be repeated in 2021.

Static bat activity surveys are being repeated in 2021 (3 deployments will be conducted across the Site in spring, summer and autumn 2021, correlating with the most recent proposed design) in order to fully inform the proposed submission.

8.3.2.2 Bat – Roost Surveys

Potential Roost Feature (PRF) inspections were carried out on 19th August 2019 upon any PRFs that were identified within 200 m[94] of the Developable Area[95] at that time.

Dusk and pre-dawn emergence/re-entry bat activity surveys were conducted on 4 no. buildings in 2019 (following the activity surveys, 2 buildings (which were considered to be Low suitability PRFs), were then excluded based on a lack of moderate to high suitability for roosting bats). Of those, 2 no. buildings were identified to support small (< 5 no.) bat roost. Dusk and pre-dawn bat surveys were repeated on these 2 no. bat roosts in 2020, and the results were found to be similar.

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[92] Labadz *et al.,* (2010). *Peatland Hydrology. IUCN UK Peatland Programme*. Available at: http://www.uplandhydrology.org.uk/wp-content/uploads/2013/12/Review-6-Peatland-Hydrology_0.pdf (Accessed 25/06/21)

[93] SNH (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

[94] Collins *et al.* (2016) Bat Survey Guidelines for Professional Ecologists. Chapter 10.5.3 Page 73 *"At sites offering opportunities for roosting bats, the survey should include a daytime inspection of structures and trees within 200 m (200m is a selected distance which acknowledges the importance of assessing potential roost locations in proximity to potential turbine locations) of the developable area for evidence of roosting bats and to make a general assessment of potential roosting features within the survey area. Although it is not essential (and may be difficult) to locate roosts of individual or low numbers of bats, sites with evidence of roosting by medium and high-risk species and/or roosts of district importance and above (see Tables 10.1 and 10.2 for further details) that use the site may require additional surveys as outlined by SNCO and in Chapter 8. In addition, any roosts of medium and high-risk species identified from the data search should also be surveyed if bats from such roosts may cross or use the site."*

[95] Page 72 of the Collins *et al.* (2016) identifies *"developable area"* as the part of the site where turbines may be located.

Bat roost surveys are being repeated in 2021 and will also include any new potential roost sites within 200 m of the current Developable Area, as was undertaken for previous iterations of the Development to ensure sufficient coverage during all surveys.

8.3.3 Mammals

Mammal surveys have been conducted across the Site since 2018, and annually thereafter, in accordance with NIEA specifications[96]. *Ad hoc* records for mammals are also regularly recorded during habitat and bird surveys while surveyors traverse the Site. With permission from NIEA, a wildlife camera was installed under the road bridge crossing the Glenmornan River within the Site.

A particular focus of these surveys was to identify the presence of badger *Meles meles*, and/or their resting places / setts, and to identify any potential holts / layups, used by otter *Lutra lutra*, within the Site Boundary, or within proximity of the Site. The mammal survey was extended to outside of the site boundary in accordance with NIEA specifications. The badger and otter surveys were conducted to more than 100 m outside of the Site Boundary, with a focus on boundary features, woodlands (plantation) and the Glenmornan River, which runs to the north of the Site.

This survey included any *ad hoc* evidence for other mammals which might be using the Site (e.g., Irish hare Lepus *timidus hibernicus* which is a NI Priority Species, where these were observed). The survey approach entailed a thorough walkover of the site and adjacent habitats. This included the identification of suitable habitat, detection of field signs such as tracks, markings, feeding signs, droppings and scent-points (e.g., fox) as well as through direct observation.

A Red Squirrel *Sciurus vulgaris* survey was conducted at the plantation woodlands adjacent to the Site in September 2019 in accordance with NIEA Specifications, however all of the plantation woodlands lie outside of the Site boundary for the Development.

8.3.4 Marsh Fritillary Butterfly Euphydryas Aurinia

A Marsh fritillary habitat assessment survey was conducted in September 2019, in accordance with NIEA specifications[97]. This identified areas where the foodplant Devil's-bit scabious *Succisa pratensis* exists within and in close proximity of the Site. This survey will be updated in 2021.

8.3.5 Common Lizard Zootoca Vivipara

Common Lizard surveys were conducted across the Site on 17 and 26 September 2019 and 01 October 2019 under NIEA Licence No. LRS/12/19, in accordance with NIEA specifications[98].

8.3.6 Aquatic Habitat Assessment

This assessment shall be conducted in summer 2021 and will include an aquatic habitat and fisheries assessment of significant watercourses within and in close proximity of the Site. This work shall include an assessment of baseline historical water quality data (where available), and will include suitability surveys for fish species. A targeted macroinvertebrate / water quality analysis will also be conducted in 2021 by an aquatic ecologist. This assessment will aim to ensure that water quality is maintained, as this will be a key mitigation feature within the assessment of the Development.

[96] Available at: https://www.daera-ni.gov.uk/articles/site-surveys

[97] NIEA (2017) Marsh Fritillary Butterfly Surveys. NIEA Specific Requiremnets. Available at: https://www.daera-ni.gov.uk/sites/default/files/publications/daera/marsh-fritillary-butterfly-survey-specifications.pdf

[98] NIEA (2017) Common or Viviparious Lizard Surveys. NIEA Specific Requiremnets. Available at: https://www.daera-ni.gov.uk/sites/default/files/publications/daera/common-lizard-survey-specifications.pdf

8.3.7 Habitat Management and Restoration Plan Surveys

This survey will include a detailed Habitat Management and Restoration Plan (HMRP) assessment across the Site to identify areas where opportunities exist for habitat restoration and enhancement with a view to increase and support biodiversity across the Site, and within the environs of the Development. The survey will focus on habitats, water quality, peatland conservation / restoration and enhancement and habitat enhancement for fauna, particularly birds such as Red Grouse and Snipe. Proposals will be dependent upon the results of the HMRP survey which will be conducted in 2021. Actions are likely to incorporate suitable management of the Site to protect and encourage biodiversity, such as re-wetting of bog, appropriate grazing regimes, and potentially tree planting (e.g., riparian buffers) where suitable sites are identified.

8.4 Baseline Conditions / Initial Findings (desk-based/survey)

A consultation meeting with NIEA (NED) took place on 07 May 2020. Woodrow and the Applicant updated NIEA on survey results to date and proposed the scope of Ecological assessment for the Development.

8.4.1 Habitats

The majority of the Site is comprised of improved acid grassland, acid grassland, improved grassland, modified blanket bog. This latter habitat includes both wet and dry modified bog, and some areas are likely to correspond to Northern Ireland Priority Habitat, particularly where active peat exists. However, these are not considered to be high-quality examples as the Site is largely degraded with only some areas considered to have limited potential for successful recovery. Other habitats recorded across The Site include species-poor upland flush (including some poor examples of the NI Priority Habitat). *Sphagnum* rich flush was identified in one area within the Site during the targeted National Vegetation Classification (NVC) survey in 2019, and wet heath (a NI Priority Habitat, but low quality example) was also identified during this NVC survey.

The Site lies adjacent to areas of conifer plantation which are considered to have low potential to support mammals such as Red Squirrel, given the notably poor condition of the trees in proximity of the Developable Area, and this has been supported by the survey results to date. These plantation habitats will not be affected by the Development.

Habitat surveys (JNCC phase 1 and NVC) are to be repeated in 2021 across the Site.

Ensuring that the most sensitive habitat is avoided throughout the design process will be a key in-built mitigation feature within this Development, and this will be fully informed by an enhanced assessment of peat across the Site.

8.4.1.1 Preliminary Active Peat (habitat) Assessment

An initial Active Peat (habitat) assessment was carried out at the end of May 2021 which highlighted the mosaic nature of the site. This preliminary Active Peat assessment followed NIEA guidelines to assess for criteria associated with active peat at each turbine location;

- % cover of *Sphagnum* and *Eriophorum* spp.;
- Peat depth ±0.5 m;
- General surface hydrology and the presence or absence of drains;
- % cover of bare peat or algal mats; and,
- Presence of typical or non-typical bog community species were noted, as well as any obvious management/grazing observations.

An enhanced assessment with regards to Active Peat will be conducted during summer 2021 to inform the ES.

8.4.2 Bats

Roost surveys were conducted in 2019 under NIEA Licence (Licence No. BDL/104/19). Four potential roost buildings were surveyed. Two of these buildings were confirmed to support a small common pipistrelle bat roost 1 – 3 No. bats. The other 2 no. buildings were ruled out.

Repeat surveys in 2020 found similar results and these will be updated again in 2021 to ensure a robust baseline for the EIA.

One of these buildings (a derelict farm house) exists within the Site, and the other lies outside of the Site, to the North.

Following a preliminary analysis of the recorded monthly static and manual bat activity data (initially using Kaleidoscope pro AutoID), it appears that recordings of bat activity of this site are relatively low across much of the Study Area.

The highest levels of activity were generally noted at features such as the plantation woodlands, along gorse hedgerow and in the vicinity of structures – particularly in the northern extents of the Study Area, at lower altitudes notable bat activity was recorded at the plantation woodland in the south west of the Study Area.

An additional season of bat activity surveys are being collected in 2021, and the data is yet to be fully analysed and interpreted.

In addition, dusk and dawn emergence surveys shall be conducted at potential roost features in the vicinity of the Site during the 2021 survey season (April – October).

Suitable bat foraging and resting sites have been identified along the haul routes for the Development.

8.4.3 Mammals

Evidence and resting sites for fox and deer have been recorded within the Site. No protected mammal burrows have been identified within the Developable Area of the Site (e.g., badger setts and / or otter holts). However, both of the latter species have been identified as foraging within the Site.

Badger hair has been collected from fences along the south of the Site. An active badger sett has been identified within a roadside embankment along a proposed Haul Route for the Development.

An otter spraint has been recorded along the Glenmornan River within the Site Boundary, to the North of the Site.

The wildlife camera set up at the road bridge crossing the Glenmornan River also recorded otter foraging and commuting along this watercourse (supported by the field evidence for this species).

Likely hare resting sites have been recorded within the Site, with such locations noted within heath habitat.

4 no. Squirrel surveys were conducted in 2019 with no confirmed evidence of red squirrel noted, however squirrel activity has been recorded within conifer plantations on the periphery of the Site outside of the site boundary in the past (pers. comm. NIEA). A road kill red squirrel was recorded along the B536 (within 2.8 km of The Site) on 1 June 2021.

8.4.4 Marsh Fritillary Butterfly Euphydryas Aurinia

None recorded on the Site, or in the environs and little suitable habitat available.

Areas where the foodplant, Devil's-bit scabious *Succisa pratensis* (DBS), has been found were surveyed under NIEA Licence (Licence No. SBP/18/19; Licence No – 2423) on

25 September 2019. These were considered to support sub-optimal habitat in 2019 largely due to being heavily over-grazed by sheep with little or no evidence of DBS present.

Habitat assessment for this species is being conducted again in 2021 to ensure that the Site remains in the same condition.

8.4.5 Common Lizard Zootoca Vivipara

1 No. common lizard was recorded on the Site in October 2019. It is considered that the Site supports a small population of this species.

8.4.6 Aquatic Habitat Assessment

The aquatic habitat assessment shall be conducted in summer 2021. The results of this will be used to inform the design proposal.

8.4.7 Habitat Management and Restoration Plan Surveys

HMRP surveys will be conducted in 2021 once the design of the Development has been fixed. This will allow an assessment of estimated habitat loss to be calculated, alongside a proposal for habitat restoration and enhancement areas to support the progression of the Development, while mitigating any potential adverse impacts where possible, and reducing residual impacts.

The HMRP will be informed by an assessment of peat in line with NIEA (2012).

8.5 Key Sensitivities

Direct impacts resulting from the Development are likely to be limited to the loss of existing habitats and/or species within the proposed working areas. Indirect impacts of the proposal are likely to be broader, and may include disturbance of wildlife by operation of the wind farm and the potential for any changes to the local hydrology which could affect habitats in the area surrounding the proposal.

Turbines will be micro-sited in 2021 so as to avoid significant impacts upon sensitive habitats such as 'Active Peat'[99]. A detailed hydrological study will inform this assessment to provide supporting information regarding hydrological systems and the integrity of hydrological units across the Site. This information will further inform the Peat Assessment, and will aim to provide an indication of areas where hydrology should be protected or restored within the Site in the interests of peatland conservation, and where active peat is found to exist within currently intact hydrological units (as described within the proposed survey methodologies within Section 8 – 10 of this scoping document).

Active peat and water quality have been identified as the two key sensitive features for the proposed Ecological Impact Assessment for the Development.

The protection of fauna, and their main resting and foraging areas across the Site and the proposed haul routes, will also be a key consideration for the EIA.

8.6 Potential Effects Assessment

For the purpose of the Ecological Impact Assessment being undertaken within this EIA, a 'significant effect', in ecological terms (whether negative or positive), is an outcome to an ecological feature from an impact, that either supports or undermines biodiversity conservation objectives for those ecological features which have been identified as important. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., National / local nature conservation policy). As such, effects can be considered significant in a wide range of geographic scales from international to local. Consequently,

[99] In line with NIEA Guidance:

'significant effects' should be qualified with reference to the appropriate geographic scale (CIEEM, 2018). A Geographic Frame of reference shall be used to identify the potential for significant effects upon all identified 'Important ecological features', in line with CIEEM 2018 and NIEA guidance.

Internationally important designated sites (European Sites, UK Site Network) which lie within the ZoI of the Development will be assessed within aHRA.

8.6.1 Residual Effects

After characterising the potential effect of the Development, and assessing the potential effects of these impacts on the 'Important ecological features', mitigation measures will be proposed to avoid and / or mitigate the identified ecological effects. Once measures to avoid and mitigate ecological effects have been finalised, assessment of the residual effects will be undertaken to determine their significance on the identified and susceptible 'Important ecological features'.

8.6.2 Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018). Different types of actions can cause cumulative impacts and effects. As such, these types of impacts may be characterised as;

- Additive/incremental – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space (CIEEM, 2018); and,
- Associated/connected – a development activity 'enables' another development activity e.g., phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess the potential impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process (CIEEM, 2018).

The CIEEM 2018 Guidelines shall be followed in relation to the assessment of effects as a result of the Development.

8.6.3 Scoped in Effects

8.6.3.1 Habitats

The Development poses the potential for habitat loss and degradation as a result of direct and indirect impacts.

An assessment will be made of the potential for any active peat to exist within the footprint of the Development (including the Site and proposed haul routes) and the works will be micro-sited accordingly in order to avoid active peat (supported by information from the hydrological assessment).

Additional surveys for fauna are conducted in conjunction with these habitat surveys as part of an Extended Phase 1 Habitat Assessment.

Both JNCC Extended Phase 1 and NVC surveys will be repeated across the site in 2021.

HRMP surveys will also be conducted later in 2021 once the design has been finalised.

8.6.3.2 Bats

The Development could result in displacement of a small population of bats, and / or the siting of turbines could result in direct impacts upon this species group.

Bat activity surveys are being repeated across the Site in 2021 according to the most recent design iteration available.

Activity surveys will also include bat habitat and activity assessments across both the proposed grid and haul routes – targeting key locations where any potential impacts are deemed most likely to occur (if there are requirements to remove mature vegetation for instance).

8.6.3.3 Marsh Fritillary Butterfly (Euphydryas aurinia)

Based on the results to date, it is considered unlikely that this species will be recorded at the Site.

Devil's-bit scabious *Succisa pratensis* (DBS) habitat was reviewed in 2020 with no change noted – this will be reviewed again in 2021.

It is considered that detailed Marsh fritillary butterfly surveys are unlikely to be required at this site in 2021; however, this will be reaffirmed following updated habitat suitability surveys in 2021. If any Marsh fritillary butterfly surveys are required, a new licence will be applied for from NIEA to conduct this work in autumn 2021.

8.6.3.4 Common Lizard (Zootoca vivipara)

Unmitigated, the Development has the potential to cause displacement and / or direct impacts upon a small population of Common lizard which exists at the Site.

It is proposed that it is not necessary to repeat reptile surveys in 2021 given that these species have been identified on the Site and mitigation will be required as part of the EIA to ensure that there are no significant effects upon this population as a result of the proposal.

8.6.3.5 Aquatic and Fisheries Assessment

In the absence of mitigation, there is considered to be some potential for the Development to have adverse effects on the water quality of local (minor) Rivers e.g., the Glenmornan River and streams.

The Aquatic and Fisheries Assessment in 2021 shall include appropriate Statutory Consultation / Baseline Water Quality (WQ) History Data (where available); a habitat Suitability survey by an experienced Aquatic Ecologist; and a Targeted macroinvertebrate / Water Quality analysis in 2021. Should any further detailed survey or assessment be required, this shall be undertaken based on the findings of the initial Aquatic and Fisheries Assessment. Ensuring water quality is maintained throughout the design will be a key mitigation feature within this proposal.

8.6.3.6 Habitat Enhancement

Opportunities for this are being considered and will be incorporated into the HMRP for the Site. Extensive areas of habitat will be assessed in 2021. Enhancements may include options such as: recommendations on grazing regimes, further prevention of burning / peat cutting, protection/ enhancement of areas of existing active peat, enhancing habitat for species such as snipe, red grouse and regular monitoring of the Site mitigation measures, to ensure success and to identify and ameliorate any failures where possible.

Active Peat (habitat) assessment will be undertaken in line with NIEA (2012) where this is relevant to the HMRP. This will be informed by the assessment being undertaken as per Section 9 and Section 10.

8.6.4 Scoped Out Effects

No Ecological Features of Interest have been scoped out at this stage. However, as described above, some features which have already been surveyed for at this Site may not require additional surveys in 2021 if NIEA are in agreement with this.

8.7 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q8.1: Do NIEA have any comments on the proposed scope for Habitat Assessment at this site in 2021, and in particular in relation to active peat and the proposed methodology for this assessment as per Section 8 (also informed by Section 9 and 10)?

Q8.2: Do NIEA require static bat detector monitoring at height in 2021? This was carried out in 2018/2019, however due to the Low bat activity at the Site, it is considered unnecessary in 2021.

Q8.3: Bat roost activity surveys following current BCT Guidance (Collins *et al., 2016*[100] *and SNH, 2019*[101]*)*, will be conducted in 2021 on any suitable Bat Potential Roost Features (PRFs) which are likely to be affected by the proposal. This will focus in particular upon PRFs which lie within 200 m of the Developable Area, in line with Bat Conservation Trust (BCT) Wind Farm Guidance (from Chapter 10, Hundt *et al.* 2012[102]). Are NIEA satisfied with this approach?

Q8.4: Mammal Surveys across the Site are to be updated again in 2021 along with surveys for haul route. This will include wildlife camera monitoring if required at the active sett (under licence). Are NIEA satisfied with this approach?

Q8.5: The plantation woodlands which lie in proximity, albeit outside of, the Site are of poor quality (trees which were notably dead / dying, or in one location were previously burnt) and are not considered to be suitable for Red Squirrel (however the plantation lying to the south-west outside of the Site connects into more suitable habitat to the south west of the Site).

It is proposed that there is no requirement to repeat Red Squirrel Surveys in 2021 given that suitable Red Squirrel Breeding and / or key foraging habitat will not be affected by the Development (i.e., plantations lie outside of the Site and will not be removed, and an agreed setback distance will be maintained from all woodland, in line with the appropriate guidelines). Are NIEA satisfied with this approach?

Q8.6: Are NIEA satisfied with the approach to surveys in relation to Marsh Fritillary Butterfly?

Q8.7: Do NIEA require a repeat of reptile surveys in late August to late September 2021?

Q8.8: Are NIEA satisfied with the approach for the Aquatic and Fisheries Assessment?

Q8.9: In relation to the proposed approach for the HMRP, are NIEA satisfied with this approach? Do NIEA have any particular comments on habitat enhancements they would like to see incorporated into the design and management of the Development?

[100] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London. ISBN:-13 978- 1-872745-96-1. Available at: https://cdn.bats.org.uk/pdf/Resources/Bat_Survey_Guidelines_2016_NON_PRINTABLE.pdf?mtime=20181115113931&focal=none

[101] Scottish Natural Heritage (2019) Bats and onshore wind turbines: Survey, assessment and mitigation. Available at: https://www.nature.scot/sites/default/files/2019-01/Bats%20and%20onshore%20wind%20turbines%20-%20survey%2C%20assessment%20and%20mitigation.pdf

[102] Bat Conservation Trust publication Bat Surveys: Good Practice Guidelines (2nd edition), (Hundt, 2012)

Q8.10: Do NIEA have any information that would be useful in the preparation of the Ecology assessment?

9 GEOLOGY AND PEAT

9.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Geology and Peat Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those receptors to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

Section 10: Hydrology and Hydrogeology focuses on the hydrological aspects of the Development whilst this Section details the geological and soils aspects including peat.

9.2 Study Area

The Study Area for the geology and peat assessment will include the land which lies within the Site boundary, as shown on Figure 2.1 of Appendix B.

9.3 Assessment Methodology

The purpose of the geology and soils assessment will primarily be to:

- Identify any areas susceptible to peat slide, using peat thickness and digital terrain model (DTM) data to analyse slopes;
- Support the identification of active and inactive peatlands (as outlined in Section 8: Ecology);
- Assist in the design process for turbines and other infrastructure to guide infrastructure to areas of no peat, shallow peat or inactive peatlands;
- Assess potential effects on soils, peat and underlying geology; and
- Develop an acceptable code for working within the Site that will adopt best practice procedures, effective management and control of onsite activities to reduce or offset any detrimental effects on the geological, hydrogeological and hydrological environment.

It has been recognised that the design of the Development is likely to be affected by the presence of peat, both as a physical consideration in terms of stability and engineering properties, and as a habitat resource.

Active peatland is identified as a priority habitat in accordance with the European Communities (EC) Council Directive 92/43/EEC Conservation of Natural Habitats and Wild Fauna and Flora (the Habitats Directive)[103] which is implemented by law in Northern Ireland through Article 3 of the Planning (Northern Ireland) Order 1991 and Planning Policy Statement 18 (PPS18), August 2009 by Department of the Environment (DOENI)[104], The Strategic Planning Policy Statement for Northern Ireland' - Planning for Sustainable Development (SPPS), September 2015[105] and PPS2, Natural Heritage, March 2011[106] .

Following scoping, it is intended that peat depth surveys, informed by preliminary ecological surveys, will be undertaken to determine the extent and nature of peat within the Study Area therefore developing a robust investigation approach suitable to the identification of these characteristics. Initial desk-based research and close co-ordination with the project ecologist and hydrologist will define extents of active, potentially active and not-active peat.

[103] European Communities (EC), Council Directive 92/43/EEC Conservation of Natural Habitats and Wild Fauna and Flora (the Habitats Directive) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31992L0043 [Accessed 09/06/2021]

[104] Department of Environment Northern Ireland (DOENI) https://www.infrastructure-ni.gov.uk/publications/best-practice-guidance-pps-18-renewable-energy [Accessed 09/06/2021]

[105] The Strategic Planning Policy Statement for Northern Ireland' - Planning for Sustainable Development (SPPS), September 2015 https://www.infrastructure-ni.gov.uk/publications/strategic-planning-policy-statement [Accessed 09/06/2021]

[106] Department of Environment Northern Ireland (DOENI) https://www.eplani.org/cmsfiles/library/draft-planning-policy/Draft-PPS2-Natural-Heritage-2011-DOE.pdf [Accessed 09/06/2021]

This approach will inform a Phase 1 peat probing methodology and National Vegetation Classifications (NVC) survey, which is discussed in Section 8: Ecology.

The principles of the Phase 1 study are:

- To collect site data that is robust and auditable, and that permits assessment;
- To undertake an assessment of baseline (existing) conditions based on an agreed methodology; and
- Permit an EIA to be undertaken that appropriately addresses the peat resource, and allows viable embedded mitigation and good design in relation to active peatlands.

9.3.1 Phase 1 Peat Study

A review of existing information from the historical planning applications for the consented Craignagapple Wind Farm (Planning Ref: J/2010/0481/F) and subsequent Supplementary Environmental Information (SEI) process from 2014 and 2016 respectively provided information on the level of peat probe coverage at the Site and an indication of depths.

Phase 1 peat depth survey would be required to the extents of proposed turbine locations where no previous probing had been captured, namely to the west for T2, T6, T7 and T9 and in the east for T12, T14 and T15. Probing in these areas would initially be on a 100 m x 100 m grid basis.

The survey will consider areas of, likely active peat, possibly active peat, transitional areas, and not active peat. Details of this are included under Section 8: Ecology.

During both the Phase 1 and Phase 2 surveys, probe data collection will include a visual inspection of characteristics at or adjacent to each probe location, a photographic record, and the following data will be recorded:

- Peat depth;
- Proximity to shallow (less than 0.3 m) or deep (greater than 0.3 m) surface water drainage;
- Presence of common cottongrass (Eriophorum angustifolium) abundant, little or absent;
- Presence of harestail cottongrass (Eriophorum vaginatum) abundant, little or absent; and
- Presence of sphagnum (Sphagnum sp.) abundant, little or absent.

9.3.2 Phase 2 Peat Study

Acknowledging the influence that peat classification will have on the design of the Development, the extent of Phase 2 study will primarily focus on the Development site layout while taking account of preliminary ecological NVC and Active Peat (habitat) assessment to ensure the scope is aligned as closely as practicable to baseline conditions. The NVC and Active Peat (habitat) assessment details are covered in Section 8 of the Scoping Report.

Following design freeze, the Phase 2 peat study will be undertaken along the Development infrastructure at 50 m centres as well as at 10 m centres at each turbine location. This approach is in accordance with the Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments[107] and Guidance on Developments on Peatland - Site Surveys[108]'.

[107] Scottish Government (2017) *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments.* Available at: https://www.gov.scot/publications/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/ (Accessed 16/06/21)

[108] Scottish Government (2017) *Guidance on Developments on Peatland - Site Surveys.* Available at: https://www.gov.scot/publications/peatland-survey-guidance/ (Accessed 16/06/21)

The probing rationale during phase 2 may require to be more densely spaced, with a dynamic approach being adopted in areas of potentially active peat, and to allow for appropriate design and to inform any micro-siting requirements during the construction phase.

Given that existing infrastructure may be used / adapted as part of the design, Phase 2 peat probing could capture more detailed information required in the vicinity of the existing infrastructure where it could be practical to extend or add to this.

Peat depths recorded will inform design constraints and active peat areas (likely/possibly/transitional/not active), to better identify these for avoidance or limiting impact given their protection under PPS18. Further information on active peat is included in Section 8: Ecology.

9.3.3 Dipwell Monitoring

Dipwells will be installed across the Site to monitor near surface water levels within the active and potentially active peat areas on Site. Dipwells will be monitored at regular intervals under a variety of conditions and the results will inform the assessment of the hydrological characteristics of the peatland and the active peat assessment. Further information is provided in Section 8: Ecology and Section 10: Hydrology and Hydrogeology.

9.3.4 Peat Condition Assessment

If required, during Phase 2 peat probing, a selection of core sample locations will be taken to provide a full peat depth profile. This will be achieved by taking 50 cm cores from the surface layer through to the basal layer. A record of each core will be kept and will include, but not be limited to the following information:

- Photograph of each core;
- Depth of acrotelm layer;
- Degree of humification; and
- Coarse and fine fibre content.

In the absence of published guidance specific to Northern Ireland, this approach is consistent with the document 'Good Practice During Windfarm Construction, 4th Edition' produced by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency (SEPA), Forestry Commission Scotland and Historic Environment Scotland, Marine Scotland Science and AECoW[109].

9.3.5 Peat Slide Risk Assessment

A Peat Slide Risk Assessment will be undertaken in accordance with Scottish Government guidance and 'Guidance on Developments on Peatland - Site Surveys[108]' along with full consultation with the relevant bodies.

The Peat Slide Risk Assessment will comprise detailed analysis and reporting on the design freeze and will include a hazard and slope stability assessment and preliminary peat management.

In accordance with the Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments[107], the hazards existing on the Site will be ranked based on factors that influence stability, namely peat depth and slope gradient. In addition, potential receptors exposure to risk will be established and hazard rankings applied across the Site, with management and mitigation measures recommended for an acceptable construction.

[109] Scottish Renewables et al. (2019) Available at: https://www.nature.scot/sites/default/files/2020-12/Good%20Practice%20during%20wind%20farm%20construction%20-%204th%20Ed.pdf (Accessed 16/06/21)

9.3.6 Peat Management Plan

An outline Peat Management Plan (PMP) will be prepared, if necessary, to inform DfI and statutory consultees of the proposed materials management methodologies to be employed during construction. The purpose of the PMP is to:

- Detail proposals for the management of peat and soils;
- Define the materials that will be excavated as a result of the Development, focusing specifically on the excavation of peat;
- Report detailed investigations into peat depths within the Site;
- Consider the potential impact of the Development on active peat and other sensitive habitats;
- Determine indicative volumes of excavated arisings, and proposals for depositing any surplus materials; and
- Detail management techniques for handling, storing and depositing peat for reinstatement.

In the absence of published guidance specific to Northern Ireland associated with the excavation and management of peat and peaty soils, the PMP will be produced in accordance with Scottish Renewables and SEPA guidance on peat excavations and management and in line with relevant guidance including Good Practice during Windfarm Construction[110] and Developments on Peatlands, Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste[111].

An assessment of excavated material based on probe data from surveys will be carried out in order to allow a determination of likely volumes that will be created during the construction process. An assessment of peat excavation will be included to determine possible re-use of materials, to minimise excavation and to avoid sensitive areas of deep peat, should they exist. The output from this element will be a peat management statement which will inform various chapters within the ES including project design, ecology, hydrology and carbon savings assessments.

9.4 Baseline Conditions / Initial Findings (desk-based/survey)

9.4.1 Solid Geology

Solid Geology within the Study Area is comprised of variable strata of the Neoproterozoic Dalradian Supergroup which is the dominant strata of the Sperrin Mountains. The is underlain predominantly by the Dart Formation comprising a variety of metamorphosed sedimentary rock including schistose psammite, semi pelites, thin metalimestone, graphitic semi pelites and quartzite. Intruding through the formerly sedimentary rocks are igneous gabbroic intrusions which have also been metamorphosed to become schistose amphibolites. These igneous and sedimentary metamorphosed rock are shown to be generally dipping 15 to 22 degrees to the south east.

Approximately 1.3 km to the south of the Site bed rock is the sedimentary Lower Carboniferous Sphincha Burn Formation comprising of conglomerate, cobbles and pebbles of vein quartz and rounded pale grey and greenish grey quartzite in coarse sandstone matrix and very coarse grained feldspathic sandstones. The conglomerates are shown to be dipping downwards approximately 21 to 29 degrees to the south east.

[110] NatureScot (2019) *Good Practice during Windfarm Construction*. Available at: https://www.nature.scot/guidance-good-practice-during-wind-farm-construction (Accessed 16/06/21)

[111] Scottish Renewables (2012) *Developments on Peatlands, Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste.* Available at: https://www.gov.scot/publications/assessment-of-peat-volumes-reuse-of-excavated-peat-and-minimisation-of-waste-guidance/ (Accessed 16/06/21)

In the south of the Site two parallel faults cross the Site from south south east to north north west, both downthrown to the north west. To the south east of the Site two thrust faults trend south west to north east and are associated with layers of graphitic semi pelites.

Bedrock is shown to outcrop on a few elevated areas on the ends of ridges to the east and south of the Site. Small sections of bedrock are also exposed in the erosional gullies of the Garrowvalt Burn and the Egalougna Burn to the south of the Site. Bedrock is also exposed at the waterfall on the unnamed tributary to the south west of the Site, also the approximate location where two faults meet and the strata changes from the Dalradian metamorphic rock to the Lower Carboniferous sedimentary deposits.

9.4.2 Drift Geology

The majority of the Site is covered by peat deposits overlying glacial till deposits which in turn overlie the bedrock. In some areas to the east no drift deposits were encountered and bedrock is exposed.

9.4.3 Peat Deposits

A Peat Slide Hazard Risk Assessment was undertaken by Enviros in 2009 which was supplemented by Further Environmental Information (FEI) in 2014 and 2016, in support of the consented Craignagapple Wind Farm application.

The Site is dominated by blanket bog, which is almost entirely modified due to turbary (areas of peat cutting in a particular area of bog) and drainage (past and ongoing). The peat deposits are essentially an accumulation of plant remains in waterlogged areas.

The peat deposits range from zero to greater than 3 m in places. The deepest areas of peat are generally recorded near the top of Owenreagh Hill along the eastern ridge to Ballykerry.

Extensive areas of peat appear widespread at the Development and usually overlie boulder clay, although in a few places they rest directly on bedrock. At the consented Craignagapple Wind Farm site, a probe survey was carried out and areas of deep peat identified. Depths encountered during the survey generally fall within the range of 0.2 m to 3.5 m with values less than 0.5 m commonplace.

Surface vegetation consists predominantly of sphagnum mosses, cotton grass, other grasses and heather but diverse floras have been identified across various geomorphologies. Exposed faces in channel banks and turbary faces reveal a single layer of brown fibrous Sphagnum eriophorum peat profile.

9.4.4 Mining and Quarrying

The Sperrins have long been the source of building materials and are now subject to exploration for gold with quarries forming prominent scars on the landscape. A review of aerial photographs in the area did not indicate any areas of obvious landscape scarring or mineral extraction on or in the immediately vicinity of the Site.

The Geological Survey of Northern Ireland (GSNI) were previously consulted as part of the consented Craignagapple Wind Farm for the production of the Peat Slide Hazard and Risk Assessment Report and indicated that no coal mining has taken place or is presently being carried out within the study area and advised any future workings, either on or beneath the surface were considered unlikely.

A small abandoned roadside quarry was also noted to the south of Glenmornan Road in the northern area of the Site.

9.4.4.1 Other Workings

Numerous old turbary sites were identified on the Site, particularly in the south eastern section of the northern site. However, digging of peat for fuel from the Site appears to have virtually ceased.

9.5 Key Sensitivities

The identified key sensitivities include:

- Active peat; and
- Defined areas of and localised mosaic blanket bog peat within the Site.

9.6 Potential Effects Assessment

9.6.1 Scoped in Effects

The potential effects that are to be considered during the assessment are:

- Inform the assessment of active peatlands;
- Potential peat slide risk;
- Excavations and management of peat and peaty soils; and
- Details of embedded mitigation and restoration relative to peatlands.

9.6.2 Scoped Out Effects

The solid geology of the Site influences the Development design and is unlikely to receive a significant effect as a result of the Development. It is therefore proposed to scope solid geology out of further assessment.

In addition, contaminated land is not anticipated to require any further consideration at the Site and is therefore scoped out.

9.7 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q3.1: Do Consultees agree with the elements proposed to be scoped out of the EIA?

Q3.2: Are Consultees content with the proposed approach to the Phase 1 and Phase 2 peat probing surveys?

Q3.3: Do DfI and NIEA or other consultees have any information that would be useful in the preparation of the geology and soil assessment?

Q3.4: Do Consultees agree with the identified policy, guidance and methods to be used as the basis of assessment?

10 HYDROLOGY AND HYDROGEOLOGY

10.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the hydrology and Hydrogeology Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those receptors to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

10.2 Study Area

The following study areas are proposed:

- Core Study Area: defined by the Site Boundary – used for site walkover and assessment of hydrological effects on receptors within immediate vicinity of the Development;
- Wider Study Area: defined as 10 km buffer of the Site Boundary – used for assessment of hydrological effects on the wider hydrological environment and designations; and
- Water Supplies (WS) Study Area: defined as 2 km buffer of the Site Boundary – used to determine potential effects on PWS and Public abstractions.

10.3 Assessment Methodology

10.3.1 Guidance

The hydrology and hydrogeology assessment of the Development will be undertaken in accordance with good practice guidance (Guidance for Pollution Prevention (GPPs) and Pollution Prevention Guidelines (PPGs) [112] which include;

- GPP2: Above ground oil storage tanks (January 2018);
- GPP4: Treatment and disposal of wastewater where there is no connection to the public foul sewer (November 2017);
- GPP5: Works and maintenance in or near water (January 2017);
- GPP8: Safe storage and disposal of used oils (July 2017);
- GPP21: Pollution incident response planning (July 2017); and
- GPP22 Dealing with spills (October 2018)

Other relevant guidance and regulation comprises the following;

- Best Practice Guidance to PPS 18 'Renewable Energy' (NI Planning Service 2009)[113];
- The Construction Industry Research and Information Association (CIRIA) Report C689 Culvert Design and Operation Guide (2010);
- CIRIA Report C532 Control of water pollution from construction sites. Guidance for consultant and contractors (2001)[114];
- CIRIA Report C648 Control of water pollution from linear construction proposed developments; technical guidance (2006)[115];

[112] NetRegs (2021). *Guidance for Pollution Prevention (GPPs)* Available at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/web address. (Accessed 04/06/21).

[113] Northern Ireland Infrastructure Assembly (2021). *Best Practice Guidance to PPS 18 'Renewable Energy'* Available at: https://www.infrastructure-ni.gov.uk/publications/best-practice-guidance-pps-18-renewable-energy. Accessed on: 04 Jun 2021.

[114] Construction Industry Research and Information Association Report (2001). *C532 Control of water pollution from construction sites. Guidance for consultants and contractors*. Available at: https://www.ciria.org/ProductExcerpts/C532.aspx. (Accessed 04/06/21).

[115] Construction Industry Research and Information Association Report (2009) *C648 Control of water pollution from linear construction proposed developments; technical guidance*. Available at: https://www.ciria.org/ProductExcerpts/C532.aspx. Accessed on: 04 Jun 2021.

- CIRIA Report (C741) Environmental Good Practice on Site Guide (2015)[116];
- Strategic Planning Policy Statement for Northern Ireland (SPPS);
- PPS 15: (Revised) Planning and Flood Risk (NI Planning Service, 2014)[117];
- Forest and Water, UK Forestry Standard Guidelines (Forestry Commission, 2011)[118];
- Best Practice Guidelines for the Irish Wind Energy Industry (Irish Wind Energy Association, Wind Skillnet (2012)[119];and
- EPA Towards the Quantification of Blanket Bog Ecosystem Services to Water (Report No.378)[120].

10.3.2Methodology

Consultation, desk studies and data requests will be undertaken to inform the baseline for the assessment. The site walkover will focus on the key receptors identified through the desk study, such as watercourses, groundwater, peat receptors and Groundwater Dependent Terrestrial Ecosystems (GWDTEs).

Arcus will obtain hydrology and geology data, including the following aspects:

- Review of published data and maps;
- A review of the relevant sections and data associated with previous planning applications;
- Consultation with the Northern Ireland Environment Agency (NIEA) including Water Management Unit (WMU), Natural Environment Division (NED), The Drinking Water Inspectorate, Northern Ireland Water and the Department for Infrastructure – Rivers Planning Advisory Unit;
- Identification of solid and surface geologies;
- Review of Pollution Prevention Guidelines and GPPs;
- Identification of surface water features, catchments, peat hydrological receptors and GWDTEs;
- Preparation of a catchment plan;
- Identification of data on public and private abstractions and supplies;
- Identification of other similar developments within 10 km; and
- Collation of flood plain information, water quality data and groundwater vulnerability information.

Arcus will provide a chapter within the ES assessing potential effects on hydrology and hydrogeology resources. The assessment and chapter will describe the potential effects of the Development including:

- Details of consultation undertaken;
- Assessment methodologies for construction and decommissioning phases;
- Hydrological/hydrogeological walkover survey to visually appraise the hydrological regime, including an appraisal of drainage channels and initial subsurface water depths in areas identified as active peat. Surveys would be undertaken with an Engineer/Geologist and Ecologist to ensure consistency of approach regarding peat;

[116] CIRIA (2015) *Construction Industry Research and Information Association Report C741 Environmental Good Practice on a Construction Site* Available at: https://www.ciria.org/ItemDetail?iProductCode=C741&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91. (Accessed 04/06/21)

[117] Northern Ireland Planning Service (2014) *Revised PPS15 Planning and Flood Risk* Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS15%20Planning%20and%20Flood%20Risk.pdf. (Accessed: 04/06/21)

[118] Forestry Commission (2014). *Forest and Water, UK Forestry Standard Guidelines* Available at: https://www.forestresearch.gov.uk/research/the-uk-forestry-standard. (Accessed 04/06/20)

[119] Irish Wind Energy Association, Wind Skillnet (2012) *Best Practice Guidelines for the Irish Wind Energy Industr*y Available at: https://windenergyireland.com/policy/best-practice-guidelines. (Accessed04/06/21)

[120] Environmental Protection Agency (2015) *Towards the Quantification of Blanket Bog Ecosystem Services to Water* https://www.epa.ie/publications/research/water/Research_Report_378.pdf (Accessed 25/06/21)

- Assessment of the operational and decommissioning phases of the project to establish the effect on the hydrological resource;
- Identify mitigation measures, where necessary;
- Identify any residual effects following mitigation;
- Cumulative assessment with other developments within 10 km of the Site Boundary;
- Production of a succinct flood risk assessment section within the impact assessment to meet the requirements of PPS 15: Planning and Flood Risk; and
- Statement of significance in accordance with The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017[121].

Arcus will also produce a Water Construction Environmental Management Plan (WCEMP) to be included as part of the embedded development design. The WCEMP will comprise methods of work which are established and effective measures that the Developer will be committed to throughout the Development consent. Accordingly, the assessment of significance of effects of the Development will be considered with the inclusion of the WCEMP. Mitigation measures in order to protect the water environment will be outlined in the WCEMP.

Felling is not anticipated; however, should any be required, felling of Forestry will be assessed in terms of increased surface water run-off, in accordance with the Forestry Commission 'Forests and Water: UK Forestry Standard Guidelines'.

If watercourse crossings are proposed, Arcus will prepare a Watercourse Crossings Inventory (WCI) as part of the WCEMP, detailing the conditions of the crossing, the proposed crossing type for each location and whether the crossing would require a licence from the Department for Infrastructure for Northern Ireland. A tabulated format will be used.

SuDS and drainage discharges will be applied for through a Schedule 6 application to DfI Rivers following consultation.

Should Private Water Supplies be identified within the WS Study Area a standalone Private Water Supplies Risk Assessment will be produced to append the ES chapter. The assessment would be based on a source-pathway-receptor methodology, which identifies the receptor (i.e., the property) and its private water supply location, the source of water feeding the private water supply and the pathways in which water travels to the private water supply location.

In relation to peat receptors, a site walkover will be carried out in combination with ecology and engineering disciplines to review the active and inactive bog habitats on site in relation to the existing topography, ditches and hydrological regime at the site to inform the understanding of the conceptual site model of the potential impacts on active and inactive peat receptors. Further information on Active Peat (habitat) assessment is provided within Section 7: Ecology.

10.4 Baseline conditions/ Initial Findings (desk-based/survey)

10.4.1 Surface Hydrology

There are several surface watercourses within the Site Boundary. Several unnamed tributaries join the Garrowalt Burn which joins the Douglas Burn flowing to the south of the Site and is classified as having 'Good' overall water quality status. Similarly, several unnamed tributaries drain into the Dunnyboe Burn to the north east of the Site, which is classified as 'Good' water quality status.

[121] *The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017.* Available at: https://www.legislation.gov.uk/nisr/2017/83/made. Accessed on: 04 Jun 2021.

The headwaters of the Glenmornan River are located in the northern section of the Site and is classified as having 'Moderate' overall water quality status.

Flood Maps (NI) show that the majority of the Development located outside floodplains for river and coastal flooding. As such, a concise section within the ES will consider how the Development will impact surface water run-off and effects on offsite receptors, in accordance with PPS 15: Planning and Flood Risk.

10.4.2Hydrogeology

Based on the Department for Agriculture, Environment and Rural Affairs (DAERA) Groundwater bodies dataset (2015) [122], the Site is underlain by the Claudy groundwater body (IDUKGBNI4NW003) which has an overall status of Good. Consultation with NIEA will identify groundwater vulnerability and aquifer productivity, which will inform the EIA process and design of the Development.

10.4.3Designated Hydrological Receptors

No statutory hydrological designations have been identified within 2 km of the Site Boundary, however all designations and their connectivity will be assessed within a study area of 10 km.

10.4.4Preliminary Active Peat (habitat) Assessment

Details of an initial Active Peat (habitat) assessment, carried out at the end of May 2021, are provided in Section 8.

10.4.5Private and Public Water Supplies

Data requests will be sent to the relevant authority requesting information on PWS within 2 km of the Development. Properties identified will be contacted via a questionnaire and site visits will verify the information provided. The assessment of PWS will follow a source-pathway-receptor model.

Northern Ireland Water will be consulted to determine whether assets which could be affected by the Development are within the WS Study Area.

10.5 Key sensitivities

The assessment within the ES will assess effects likely during the construction, operation, and decommissioning of the Development. Key sensitivities and potential effects are likely to be:

- Reduction in surface water quality or quantity to surface watercourses as a result of chemical pollution, peat slide or bog burst, increase in erosion or sedimentation or impediments to flow due to, for example, onsite spills, felling, excavation works or insufficient sediment mitigation;
- Changes to groundwater interflow patterns from temporary works such as physical cut-offs or dewatering for turbine foundations and crane hardstandings, affecting the Claudy groundwater body and leading to reduced function of or severance of flow to GWDTEs or peat receptors (including active peat);
- An assessment of potential effects on areas identified as active peat. Dipwells will be installed at representative locations / areas identified as active peat or potentially active peat and near surface water levels monitored across a range of seasons. A number of bog water table metrics indicative of intact bog will be considered in the

[122] Department for Agriculture, Environment and Rural Affairs (DAERA) (2015) *Groundwater bodies dataset.* Available at https://www.daera-ni.gov.uk/publications/groundwaters-digital-datasets. (Accessed 04/06/21)

assessment of areas of Active Peat, based on relevant literature and professional judgement based on experience of peatland restoration:
  - The water table should not be >20 centimetres (cm);
  - The water table should not be >10 cm except with the exception of sustained dry conditions; and
  - The water table should normally be sustained within 5 cm of the top of the acrotelm[123].
- Reduced quality or quantity of supply for public or private water supplies due to changes in groundwater, near-surface or surface water flow;
- Acidification of watercourses as a result of construction works and related tree felling;
- Increase in runoff and flood risk due to increased impermeable hardstanding as part of the Development; and
- Cumulative effects if the potential effects arising from the Development are in combination with other relevant wind farm projects or activities.

10.6 Potential Effects Assessment

10.6.1 Scoped in Effects

Assessment of potential effects on the following receptors will be scoped in:

- Chemical pollution and sedimentation of watercourses as a result of construction;
- Impediments to near-surface water and drainage to all watercourses as a result of construction, felling, potential de-watering and presence of linear infrastructure such as access tracks;
- Negative effects on quality, quantity and continuity of public and private water supplies as a result of construction and operation;
- Impediments to flow and pollution of any identified GWDTEs as a result of construction;
- Impacts to peat receptors (including active peat) from hydrological or hydrogeological changes;
- Acidification of watercourses as a result of construction works and related tree felling;
- Increased run-off and flood risk as a result of increased hardstanding and compaction of superficial deposits and soils; and
- Cumulative effects if the potential effects arising from the Development are in combination with other relevant wind farm projects or activities.

10.6.2 Scoped out effects

Assessment of potential effects on the following receptors will be scoped out:

- Migration of pollutants from contaminated land as the Site has not previously been developed for heavy industry and it is unlikely contaminated land will be encountered;
- Designated receptors not hydrologically connected to the Development as there is no potential for effects on these receptors; and
- Pollution and sedimentation effects on the water environment at distances greater than 10 km and it is proposed that receptors beyond this distance are scoped out.

10.7 Key Questions for the Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

[123] Labadz et al, (2010). *Peatland Hydrology. IUCN UK Peatland Programme*. Available at: http://www.uplandhydrology.org.uk/wp-content/uploads/2013/12/Review-6-Peatland-Hydrology_0.pdf (Accessed 25/06/21)

Q10.1: Are consultees content with the proposed methodology and scope of the hydrology and hydrogeology assessment?

Q10.2: Do consultees have any information that would be useful in the preparation of the hydrology and hydrogeology assessment?

11 ARCHAEOLOGY AND CULTURAL HERITAGE

11.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Archaeology and Cultural Heritage Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those archaeological and cultural heritage receptors to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

The assessment will consider direct, indirect (largely visual changes to setting) and cumulative effects as a result of the Development upon the following receptors:

- Archaeology - above and below ground, designated or not. Consideration will be given to the potential for currently unknown (buried) archaeological remains to exist within the Development; and
- Cultural Heritage – World Heritage Sites, Scheduled Monuments, Listed Buildings, and Registered Historic Parks, Gardens and Demesnes, Conservation Areas and assets in State Care.

The assessment will be conducted with reference to the relevant statutory and planning frameworks for cultural heritage. In addition to those mentioned in the Planning and Policy Section cognisance will also be taken of PPS 6: Planning, Archaeology and Built Heritage and the Strategic Planning Policy Statement for Northern Ireland (SPPS)[124] (September 2015).

The following established guidelines and best practice guidance are pertinent to the assessment of archaeological and setting effects:

- Guidance on Setting and the Historic Environment (2018) provided by the Department for Communities (DfC) Historic Environment Division (HED)[125];
- Development and Archaeology: Guidance on Archaeological Works in the Planning Process (2019) provided by DfC HED[126]; and
- Standards and Guidance for Archaeological Desk-Based Assessments provided by the Chartered Institute for Archaeologists (CIfA)[127].

11.2 Study Area

Two study areas will be considered as part of the assessment, comprising:

A Study Area of 1 km from the Site Boundary, will be used to collect data, both designated and non-designated, to inform on the archaeological potential of the Site.

A 5 km Study Area from the Site Boundary for designated heritage assets, shown in Figure 11.1 of Appendix B, will be used to assess the setting of statutory designated assets within the Site Boundary and surrounding landscape. Selected designated heritage assets beyond

[124] Department of the Environment (2015) *Strategic Planning Policy Statement for Northern Ireland (SPPS).* Available online at https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/SPPS.pdf. Accessed on: 07 June 2021

[125] Department for Communities Historic Environment Division (2018) *Guidance on Setting and the Historic Environment.* Available online at: https://www.communities-ni.gov.uk/sites/default/files/publications/communities/guidance-on-setting-and-the-historic-environment.pdf Accessed on: 07 June 2021

[126] Department for Communities Historic Environment Division (2019) *Development and Archaeology: Guidance on Archaeological Works in the Planning Process*. Available online at: https://www.communities-ni.gov.uk/sites/default/files/publications/communities/dfc-hed-guidance-on-archaelogical-works-in-the-planning-process.pdf Accessed on: 07 June 2021

[127] Chartered Institute for Archaeologists (December 2014, Updated January 2017) *Standards and Guidance for Historic Environment Desk-Based Assessment*. Available online at https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf Accessed on: 07 June 2021

5 km may also be considered where it is identified that the wider landscape context contributes to their setting or where long-distance views contribute to setting.

For the purposes of this document, designated heritage assets include World Heritage Sites, Scheduled Monuments, assets in ownership or guardianship of the DfC, Listed Buildings, and Registered Historic Parks, Gardens and Demesnes as well as Conservation Areas. Non-designated heritage assets include Areas of Significant Archaeological Interest (ASAIs), monuments, archaeological sites, buildings, places and landscapes which do not meet the criteria for a designated asset but require consideration under planning due to their heritage significance.

Initial consultation has not yet been undertaken with the DfC HED and the Council with regards to the Study Areas, however, the extents of the Study Areas are based on professional judgement and have been designed to account for the sensitivity of the receiving historic environment and the potential effects of the Development.

Consultation will commence and be ongoing as part of the assessment process.

11.3 Assessment Methodology

A Desk-Based Assessment (DBA) of cultural heritage records in and around the Development, as shown alongside the Site Boundary in Figure 11.1 of Appendix B will be undertaken and will be compiled to establish the baseline against which the impact assessment will be carried out. Data will be gathered from the following sources:

- DfC's datasets including: Scheduled Historic Monument Areas, Areas of Special Archaeological Interest, Defence Heritage, Historic Parks and Gardens, Industrial Heritage Record, Listed Buildings, Northern Ireland Sites and Monuments Records, assets in ownership or guardianship of the DfC and Areas of Archaeological Potential;
- Cartographic Evidence as held by the Public Record Office of Northern Ireland (PRONI);
- Contemporary Aerial Photography as held by PRONI; and
- Local archives and libraries, as relevant.

The DBA will be augmented by a walkover survey to provide information on the archaeological potential of the Site and to validate the documentary evidence. This fieldwork will be conducted to:

- Assess and validate documentary data collected;
- Identify the extent and condition of any visible archaeological remains; and
- Determine whether previously unrecorded historic features are visible.

Subject to the findings of the DBA, the requirement for and extent of any additional pre-determination surveys will be agreed, with an emphasis on avoiding direct effects on any known cultural heritage features through careful design of the Development including all infrastructure.

An assessment will be made of the potential indirect effects upon heritage assets and their setting including historic landscapes. The assessment will proceed from a consideration of the 'sensitivity' of a cultural heritage feature against the 'magnitude' of any potential change resulting from the Development, to arrive at the 'significance' of the effect. The assessment of sensitivity of archaeological and historical assets reflects the relative weight which statute and policy attach to them, principally as published in PPS6[128].

[128] Department of the Environment (1999) *PPS 6: Planning, Archaeology and the Built Heritage*. Available at: https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/PPS06%20Archaeology%20and%20Built%20Heritage_0.pdf (Accessed 07/06/21)

11.4 Baseline Conditions and Key Sensitivities

For the purposes of this document, information relating to archaeology and cultural heritage has been gathered through a preliminary desk top records search using available online resources to indicate potential features of interest.

11.4.1Site and 1 km Study Area Baseline

An initial review of records held by the Northern Ireland Sites and Monuments Record (NISMR) database shows that there are no known cultural heritage features within the Site Boundary. The NISMR database does indicate that there has been a previous archaeological investigation within the Site as part of a pre-commencement condition for the development of the operational Owenreagh I Wind Farm. No evidence for archaeological deposits were revealed during these works, and it was deemed that no further archaeological mitigation was required. This, however, does not preclude the identification of additional hither-to unidentified archaeological remains within the Site Boundary during future development.

The preliminary record search indicates that there are 15 non-designated heritage records situated within the 1 km Study Area comprising monuments and industrial sites, demonstrating the wider archaeological potential of the landscape (Table 11.1).

Table 11.1: Non-designated heritage records within 1 km Study Area

Source Reference	Asset Name	Description
TYR 011:030	Mound	At the N end of a glacial ridge, the site consists of a prominent, flat-topped, oval, peat & grass-covered mound, 10m N-S x 8m E-W & standing on average 1.5m high. Many stones protrude through the grass cover, most of which are loose and are not numerous enough to classify the site as a cairn. However, one large, flat slab set on edge protrudes on the N side, it is earthfast & may be structural. This fact, allied to the prominent nature of the mound suggest this site may be archaeological.
TYR 011:036	Mass Rock	This mass rock was reported recently by a local informant, sited the corner of a field. No further details available at present.
TYR 005:011	Megalithic Tomb: Carnanbane	On a terrace of flat improved grassland overlooking the valley of the Glenmoran River which flows to N. The site enjoys fine views to N & W, but higher ground rises to E & S. Although there are no visible remains of the site due to land improvement, some large boulders in the ditch to W of the site location may once have been part of the monument.
TYR 006:008	Standing Stone	On improved grassland with gently rising higher ground to N, this stone has been removed. The site overlooks the valley of the Glenmornan River, which flows to SW.
04105:000:00	Corn Kiln Knockinarvoer	Industrial Heritage Record
04106:000:00	Bridge Silverhill / Gorticrum Scotch	Industrial Heritage Record
04107:000:00	Bridge Keenaghan / Knocknahorna	Industrial Heritage Record

Source Reference	Asset Name	Description
04108:000:00	Bridge Knockinarvoer	Industrial Heritage Record
04116:000:00	Still House Owenreagh	Industrial Heritage Record
04121:000:00	Slate Quarry & Limekiln Owenreagh	Industrial Heritage Record
04122:000:00	Still House Knocknahorna / Owenreagh	Industrial Heritage Record
04125:000:00	Old Still House Keenaghan / Silverhill	Industrial Heritage Record
04147:000:00	Bridge Ballykeery / Craignagapple	Industrial Heritage Record
04148:000:00	Bridge Ballykeery	Industrial Heritage Record
04149:000:00	Bridge Ballykeery / Meendamph	Industrial Heritage Record

11.4.2Statutory Designated Heritage Assets within 5 km Study Area

Preliminary desk studies indicate that there are no statutory designated heritage assets within the Site Boundary. Within the 5 km Study Area, there are no World Heritage Sites or Battle sites.

There are 14 Scheduled Monuments, 19 Listed Buildings, and one Historic Park, Garden and Demesne within the 5 km Study Area as detailed in Tables 11.2, 11.3, and 11.4, respectively. It is also noted that the Scheduled TYR006:006 - Court Tomb, 'The white Rocks' is in state care and their area several Scheduled Monuments to the east that are part of the Ballynamallaght prehistoric landscape that are not in the study area but will be included in the assessment.

These assets are detailed in the section below and shown on Figure 11.1. Due to their proximity to the Development, these are the assets considered most likely to receive a change in setting should they fall within the ZTV and have open views of the Development. The assets detailed in Table 11.2 – 11.4 will be subject to further assessment through the EIA process.

Table 11.2: Scheduled Monuments within the 5 km Study Area

County	Scheduled Monument Number	Asset Name
TYR	002:007	Wedge Tomb: Giants Grave
TYR	005:002	Portal tomb
TYR	005:010	Wedge tomb
TYR	005:014	Stone Circle

County	Scheduled Monument Number	Asset Name
TYR	006:006	Court Tomb, 'The white Rocks' (area surrounding the state care monument)
TYR	006:007	Standing stone and stone circles
TYR	006:015	Rath
TYR	006:022	Stone Circles (2) and possible alignment
TYR	006:030	Stone circles (2) standing stone and alignment
TYR	006:048	17th century house
TYR	011:012	Megalithic tomb
TYR	011:017	Killeen
TYR	011:018	Wedge Tomb and Stone Circle: Giant's Grave
TYR	011:019	Stone Circles
TYR	006:044-047	Ballynamallaght Prehistoric landscape, standing stone, cairns and field walls

Table 11.3: Listed Buildings within the 5 km Study Area

Reference	Asset type	Address	Grade
HB10/06/011	Wilson House, outbuildings, pig house, fowl house, cart house, walls, piers and gate.	Wilson House, 28 Spout Road, Dergalt, Strabane, BT82 8NB	B+
HB10/09/005	Church, gates, gate piers and railings	Donemana Presbyterian Church, Church View, Donemana, Strabane, BT82 0PB	B2
HB10/09/006	Church, gates and gate piers	St Marys RC Church, Aghabrack Lisnaragh Road, Donemana, Strabane, BT82 0SD	B1
HB10/09/027	Mill buildings	Silverbrook Mills, 90 Brook Road, Donemanagh, Strabane, BT82 0RX	B1
HB10/09/028	House and outbuilding	6 Balbane Road, Donemana, Strabane, BT82 0RW	B2
HB10/11/001 A	Holy Hill House, entrance gate and gate pillars, coal cellar and walling.	Holy Hill House, 78 Ballee Road, Artigarvan, Strabane, BT82 0AA	A
HB10/11/001 B	Holy Hill House Outbuilding, dog house, ash pit farmyard walling and gates.	Attached Outbuilding at Holy Hill House	B1

Reference	Asset type	Address	Grade
HB10/11/001 C	Yardman's House	Yardman's House, Holy Hill, 80 Ballee Road, BT82 0AA	B1
HB10/11/001 D	Holy Hill House Outbuildings	Barn with cellars at Holy Hill House, 78 Ballee Road, Artigarvan, Strabane, BT82 0AA	B1
HB10/11/001 E	Holy Hill House Outbuildings	Laundry at Holy Hill House	B1
HB10/11/001 F	Holy Hill House Outbuilding and walling	Forge at Holy Hill House,	B1
HB10/11/001 G	Holy Hill House Stables, boiler house and walling	Stable for Coach Horses at Holy Hill House	B1
HB10/11/001 H	Holy Hill House Outbuildings	Byres at Holy Hill House	B1
HB10/11/001 J	Holy Hill House Stables	Stables for farm Horses at Holy Hill House	B1
HB10/11/001 K	Saw Mill	Saw Mill at Holy Hill House	B2
HB10/11/001 L	Holy Hill House Walls, glass houses and potting shed	Walled Garden and Vine House at Holy Hill House	B1
HB10/11/007	Church, gates, gate piers and walling	St Joseph's RC Church, Moorlough Road, Glenmornan, Strabane, BT82 0ER	B1
HB10/11/009	Mill & mill wheel	Miller's Mill, 3 Art Road, Artigarvan, Strabane, BT82 0HA	B2
HB10/11/019	House and gate	38 Station Road, Ballymagorry, Strabane, BT82 0AX	B1

All assets, unless listed in address are situated within County Tyrone.

Table 11.4: Historic Parks, Gardens and Demesnes within the 5 km Study Area

Source Reference	Asset Name
T-022	Holy Hill (also known as Holyhill, Holly Hill House)

11.5 Potential Effects Assessment

11.5.1Scoped in Effects

Known archaeology will be avoided during site design, where possible. Direct effects upon other cultural heritage sites identified during the DBA (i.e., those not currently recorded within the NISMR) should they occur, will be assessed as part of the EIA. The assessment of physical effects will consider direct effects where sites or potential sites / buried archaeology are in danger of being truncated or removed during the decommissioning / construction phase of the Development.

The assessment of indirect effects considers changes in setting which have the potential to affect heritage assets. For the purposes of evaluating indirect effects upon the setting of heritage assets, designation status and proximity to the Development, where it also falls within the ZTV, will determine whether further assessment is required. As such, nationally designated sites (e.g., Parks, Gardens and Demesnes, Listed Buildings, Scheduled Monuments and assets in ownership or guardianship of the DfC.) that are within the 5 km Study Area and the ZTV will be assessed as part of the EIA as will the Ballynamallaght prehistoric landscape.

Heritage specific viewpoints may be required to support the assessment. Based on an initial review, the following visualisations will be provided:

Table 11.5 Preliminary Cultural Heritage Viewpoint List

ID	Reference	Asset Name	ING ref. (preliminary)	
CH1	TYR 006:006	Court Tomb, 'The white Rocks'	248373	396335
CH2	TYR 011:017	Killeen	245778	397562
CH3	TYR 006:044-047	Ballynamallaght Prehistoric landscape, standing stone, cairns and field walls	251042	398551
5*	T-022	Holy Hill or Holly Hill House Historic Park, Garden and Demesne	238190	398696

*LVIA Viewpoint Ref: 5

For the purposes of the assessment of cumulative effects, only wind farm developments (operational, under construction, consented or application stage wind farms) within approximately 10 km of the Site Boundary will be considered. The potential for a significant cumulative effect is considered likely to occur where the ZTVs for the Development and cumulative wind farms overlap, i.e., where each is theoretically simultaneously visible.

11.5.2Scoped Out Effects

The assessment of indirect effects upon the setting of undesignated archaeology and cultural heritage assets is broadly based upon its designation status, or lack thereof. Known undesignated sites are often of low sensitivity and therefore are unlikely to receive a significant indirect effect as defined by the EIA Regulations and are scoped out of consideration.

Nationally Designated Sites (Listed Buildings and Scheduled Monuments) beyond those identified in Tables 11.2 – 11.4 are scoped out of consideration.

11.6 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q11.1: Do consultees agree with the proposed methodology and scope of assessment, including viewpoint selection?

Q11.2: Do consultees have any information regarding current or recent archaeological work or projects being undertaken within or in the 5 km Study Area, particularly those whose results may not yet be recorded in the Northern Ireland Sites and Monuments Records?

Q11.3: Are consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Development and should be considered within the EIA?

Q11.4: Do consultees have details of any cultural heritage sites in the vicinity of the Development which it considers may require further consideration within the EIA process?

12 NOISE

12.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Noise Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those receptors to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

Sources of noise during operation of a wind turbine are both mechanical (from machinery housed within the turbine nacelle) and aerodynamic (from the movement of the blades through the air). Modern turbines are designed to minimise mechanical noise emissions from the nacelle through isolation of mechanical components and acoustic insulation of the nacelle. Aerodynamic noise is controlled through the design of the blade tips and edges. In most modern wind turbines, aerodynamic noise is also restricted by control systems which actively regulate the pitch of the blades.

While noise from the wind turbines does increase with wind speed, at the same time ambient background noise (for example wind in trees) usually increases at a greater rate. Planning conditions are used to enforce compliance with specified limits.

The effects of noise from the Development will be assessed in consultation with the Environmental Health Department of the Council, who are a statutory consultee to DfI Planning.

12.2 Assessment Methodology

12.2.1 Guidance

The following guidance and information sources are pertinent to the assessment of wind turbine noise:

- PPS18;
- SPPS;
- Best Practice Guidance to Planning Policy Statement 18: Renewable Energy[129] (BPG);
- ETSU-R-97: The Assessment and Rating of Noise from Wind Farms[130]; and
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (GPG).

12.2.1.1 Planning Policy Statement 18: Renewable Energy

Current planning policy for renewable energy developments in Northern Ireland is contained in PPS18, and the accompanying Best Practice Guidance (BPG).

12.2.1.2 Best Practice Guidance to PPS18

The BPG refers to the use of ETSU-R-97 for the assessment of windfarm noise, although in January 2015, the Northern Ireland Assembly Environment Committee published a report on its inquiry into wind energy, which included a recommendation that the use of the ETSU-R-97 guidelines should be reviewed. To date, that guidance has not emerged, and the use of ETSU-R-97 remains valid.

In March 2016, the Department of the Environment launched a call for evidence in relation to strategic planning policy for renewable energy development[131]. This will inform a future revision to policy and guidance in relation to windfarm development in Northern Ireland.

[129] Department of the environment (2009), Best Practice Guidance to Planning Policy 18 'Renewable Energy'.
[130] ETSU (1996) ETSU-R-97 The Assessment and Rating of Noise from Wind Farms
[131] Department of the Environment (2016), call for Evidence: Strategic planning policy for Renewable Energy Development.

The Institute of Acoustics' (IOA) Good Practice Guide to the application of ETSU-R-97[132] (GPG) is currently endorsed for use in Northern Ireland, with the exception of the Example Planning Condition provided in Appendix B of the GPG.

12.2.1.3 ETSU-R-97

The assessment methodology for operational noise is described in ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms'. The aim of ETSU-R-97 is to provide:

"Indicative noise levels thought to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development or adding unduly to the costs and administrative burdens on wind farm developers or local authorities".

The report makes it clear from the outset that any noise restrictions placed on a development must balance the environmental impacts of the Development against the national and global benefits which would arise through the development of renewable energy sources.

Noise criteria (or limits) are specified, which are a combination of a margin of 5 dB above the prevailing, wind speed-dependent, background noise level and fixed lower noise limits, which are applicable in low background noise situations. The fixed lower noise limits are defined as:

- 35 - 40 dB, $L_{A90,10min}$ during the day, with the value chosen dependent on the number of affected properties, the effect of the number of kWh (kilowatt-hours) generated and the duration and level of exposure;
- 43 dB, $L_{A90,10min}$ at night, a level chosen to safeguard against sleep disturbance; and
- 45 dB, $L_{A90,10min}$ at properties where the occupier has a financial involvement in the proposed development, during both the day and night.

The specified noise limits relate to the cumulative effects of all turbines that affect a particular location.

Where the occupier of the property has a financial interest in a development, ETSU-R-97 states that the fixed lower noise limit for both daytime and night-time can be increased to 45 dB(A) and that *"consideration should be given to increasing the permissible margin above background"*.

12.2.1.4 The Good Practice Guide

The GPG was published by the Institute of Acoustics (IOA) in May 2013 and has been endorsed by the UK Government and Northern Ireland Executive as current industry best practice. The guide presents current good practice in the application of ETSU-R-97 assessment methodology for wind turbine developments at the various stages of the assessment, and will be followed throughout the assessment.

12.2.2Methodology

The specific methodologies involved in applying ETSU-R-97 to a proposed new development will be detailed in full in the ES but, in summary, these provide recommendations for noise limits relating to the existing levels of background noise for quiet day-time and night-time periods.

[132] Institute of Acoustics (2013), A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.

To carry out a noise assessment in accordance with ETSU-R-97, the following steps are required:

- Specify the number and locations of the wind turbines;
- Identify the locations of the nearest, or most noise sensitive, neighbours;
- Determine the background noise levels as a function of site wind speed at the nearest neighbours, or a representative sample of the nearest neighbours;
- Determine the quiet day time and night time criterion curves from the background noise levels identified at the nearest neighbours;
- Specify the type and noise emission characteristics of the wind turbines proposed for the site;
- Calculate the noise immission[133] levels due to the operation of the wind turbines as a function of site wind speed at the nearest neighbours; and
- Compare the calculated noise immission levels with the derived criterion curves and assess in the light of relevant planning requirements.

12.3 Baseline Conditions and Key Sensitivities

The assessment is limited to the effects on human receptors at noise-sensitive locations, namely residential properties, schools, hospitals and places of worship. Each of these receptor types are considered to be of equal value.

Noise effects are assessed on the basis of the level of noise produced by the Development relative to established criteria or limits. In particular, the use of the ETSU-R-97 methodology does not result in a magnitude of effect in the manner employed for other types of assessment within the EIA, but rather a test of acceptability.

The Development area has a substantial planning history, with EIAs carried out for the operational Owenreagh I Wind Farm, operational Owenreagh II Wind Farm, and the consented Craignagapple Wind Farm. A baseline noise survey was undertaken in 2014 at a number of receptors surrounding the Site, as part of the consented Craignagapple Wind Farm Noise Assessment[134]. Additional baseline measurements were carried out at a further two locations in 2016 as part of the subsequent FEI Report[135]. Inspection of both reports indicate that the measurements were carried out by a suitably qualified person and conform to the requirements of ETSU-R-97 and the GPG. As such, it is proposed that the baseline noise levels measured during these surveys remain valid and appropriate for use as part of the assessment of the Development.

The location of the Development relative to nearby receptors is shown in Figure 12.1: Indicative Noise Study Area in Appendix B. Receptors that require to be included within the noise assessment will be identified through noise modelling, and assessed in accordance with ETSU-R-97 and the GPG. A number of properties are understood to be financially involved with the Development, and therefore subject to the increased fixed lower limit for financial involvement as described in ETSU-R-97. As part of the assessment, all receptors requiring assessment will be identified (including those considered to be financially involved), and agreed with the Council.

[133] Immission' refers to the noise at a receiver location, whereas 'emission' relates to noise produced by a source.

[134] Noise Assessment Report (2014), Brookfield Renewable Energy Group.

[135] Craignagapple Wind Farm Further Environmental Information Planning Ref: J/2010/0481/F (2016), Brookfield Renewable.

12.4 Potential Effects Assessment

12.4.1 Scoped in Effects

12.4.1.1 Cumulative Assessment

ETSU-R-97 and the GPG state that the noise limits that ETSU-R-97 recommends apply to the cumulative effect of noise from all wind turbines that may affect a particular location. A detailed search will be undertaken in consultation with the Council to identify any wind energy developments either operational, consented or in planning which may also require consideration in the assessment process. The requirement for a detailed cumulative assessment of these wind farms will be established through the '10 dB difference' rule as described in the GPG.

In the event that the consideration of the 10 dB difference rule shows that a detailed cumulative assessment is required at one or more receptors, cumulative noise levels will be established in line with the requirements of the GPG, and assessed against the ETSU-R-97 noise limits to determine the level of headroom present. This is the level of noise which may be generated by the Development, after taking all relevant cumulative developments into account ('the apportioned noise limits').

Noise due to the Development will then be assessed against the apportioned noise limits to determine the Development's compliance with ETSU-R-97 when considered both cumulatively and in isolation.

12.4.2 Scoped Out Effects

12.4.2.1 Low Frequency Noise and Infrasound

A study[136], published in 2006 by acoustic consultants Hayes McKenzie on the behalf of the DTI, investigated low frequency noise from wind farms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines, but that complaints attributed to low frequency noise were in fact, most likely due to a phenomenon known as Amplitude Modulation (AM).

In February 2013, the Environmental Protection Authority of South Australia published the results of a study into infrasound levels near wind farms[137]. This study measured infrasound levels at urban locations, rural locations with wind turbines close by, and rural locations with no wind turbines in the vicinity. It found that infrasound levels near wind farms are comparable to levels away from wind farms in both urban and rural locations. Infrasound levels were also measured during organised shut downs of the wind farms; the results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.

Bowdler et al. (2009) [138] concludes that:

"...there is no robust evidence that low frequency noise (including 'infrasound') or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours".

[136] The measurement of low frequency noise at three UK wind farms, Hayes McKenzie, The Department for Trade and Industry, URN 06/1412, 2006
[137] Environment Protection authority (2013) *Infrasound levels near wind farms and in other environments.* Available at: http://www.epa.sa.gov.au/xstd_files/Noise/Report/infrasound.pdf (Accessed 17/06/21)
[138] Bowdler et al. (2009). Prediction and Assessment of Wind Turbine Noise: Agreement about relevant factors for noise assessment from wind energy projects. Acoustic Bulletin, Vol 34 No2 March/April 2009, Institute of Acoustics

12.4.2.2 Amplitude Modulation

In its simplest form, Amplitude Modulation (AM), by definition, is the variation in noise level of a given source. This variation ('the modulation') occurs at a specific frequency in the case of wind turbines, which is defined by the rotational speed of the blades.

There is a distinction between 'normal' AM of wind turbine noise, characterised as blade swish and Enhanced AM (EAM) or Other AM (OAM), sometimes characterised onomatopoeically as 'thump'. It should be noted that ETSU-R-97 describes and makes allowance for normal AM or blade swish.

A study[139] was carried out in 2007 on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with AM. This report defined AM as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency. Its aims were to ascertain the prevalence of increased AM (OAM) on UK wind farm sites, to try to gain a better understanding of the likely causes, and to establish whether further research into AM is required.

The study concluded that OAM had occurred at only a small number (4 of 133) of wind farms in the UK, and only for between 7% and 15% of the time. It also stated that, the causes of OAM were not well understood and that prediction of the effect was not then currently possible.

This research has recently been supported by an in-depth study undertaken by Renewable UK[140], which has identified that many of the previously suggested causes of OAM have little or no association to the occurrence of OAM in practice. The generation of OAM is based upon the interaction of a number of factors, the combination and contributions of which are unique to each site. With the current state of knowledge, the research concludes that is not possible to predict whether any particular site is more or less likely to give rise to OAM, and the incidence of OAM occurring at any particular site remains low, as identified in the University of Salford study. The report includes a sample planning condition to address AM, however that has not yet been validated or endorsed by UK Government or the IOA.

In 2016, the IOA proposed a measurement technique[141] to quantify the level of AM present in any particular sample of wind farm noise. This technique is supported by the Department of Business, Energy & Industrial Strategy (BEIS, formerly The Department of Energy & Climate Change) who have published guidance[142], which follows on from the conclusions of the IOA study in order to define an appropriate assessment method for AM, including a penalty scheme and an outline planning condition. Notwithstanding this, the suggested outline planning condition is as yet unvalidated, remains in a draft form and would require site-specific legal advice on its appropriateness to a specific development.

Section 7.2.1 of the GPG therefore remains current, stating:

"the evidence in relation to 'Excess' or 'Other' Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM".

[139] Research into aerodynamic modulation of wind turbine noise'. Report by University of Salford, The Department for Business, Enterprise and Regulatory Reform, URN 07/1235, July 2007.
[140] Wind Turbine Amplitude Modulation: Research to improve understanding as to its Cause and effects, Renewable UK, 2013
[141] Institute of Acoustics, (2016) A Method for Rating Amplitude Modulation in Wind Turbine Noise
[142] BEIS, (2016), Review of the evidence on the response to amplitude modulation from wind turbines

12.4.2.3 Ground Borne Vibration

Research undertaken by Snow[143] in 1996 found that levels of ground-borne vibration 100 m from the nearest wind turbine were significantly below criteria for 'critical working areas' given by British Standard BS6472:1992 Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz), and were lower than limits specified for residential premises by an even greater margin.

Ground-borne vibration from wind turbines can be detected using sophisticated instruments several kilometres from a wind farm site as reported by Keele University[144]. This report clearly shows that, although detectable using highly sensitive instruments, the magnitude of the vibration is orders of magnitude below the human level of perception and does not pose any risk to human health.

12.4.2.4 Operational Noise Sources other than Wind Turbines

Other sources of operational noise are limited to the on-site substation. Based upon Arcus' substantial experience of substations, they emit relatively low levels of noise.

The substation, will be located as far as practicable form the nearest dwellings (typically a similar or greater separation distance as the nearest wind turbines, i.e., approximately 1.2 km). Given the low level of noise typically generated by such plant, combined with the attenuation afforded by the likely substantial separation distance to residential dwellings, no significant noise effects are anticipated. It is therefore proposed that a detailed assessment of noise due this plant is scoped out of the assessment. In the unlikely event that the plant is required to be located within 500 m of the closest residential dwelling, further consultation will be undertaken with the Council to agree where a more detailed assessment is required.

12.4.2.5 Construction and Decommissioning Noise

Noise during the Development's construction phase will consist of that generated by onsite activities and noise due to construction traffic on public roads. Whilst the precise location of construction works has yet to be established, the closest noise-sensitive receptor is likely to be located to the west of the Development, situated approximately 1 km from the closest turbine location, based upon the current scoping layout.

By virtue of the large separation distances and low number of residential receptors in the locality, no significant construction noise impacts are anticipated, and it is therefore proposed that a detailed construction noise assessment is scoped out of the assessment. Notwithstanding this, the assessment will include a discussion of construction noise guidance, and detail best practice methods for minimising construction noise impact in line with the requirements of BS5228:2009+A1:2014 *Code of Practice for Noise and Vibration Control on Construction and Open sites*.

The effects of noise during decommissioning of the Development are likely to be similar to those during construction. However, both the magnitude and duration of such effects are likely to be less than those during construction.

12.5 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q12.1: Are consultees content with the proposed methodology and scope of assessment?

[143] ETSU (1997), Low Frequency Noise and Vibrations Measurement at a Modern Wind Farm, prepared by D J Snow

[144] Microseismic and infrasound monitoring of low frequency noise and vibrations from wind farms: recommendations on the siting of wind farms in the vicinity of Eskdalemuir, Scotland". Keele University, 2005

Q12.2: Do the Council and consultees agree that the previous baseline noise levels measured as part of the assessment for the consented Craignagapple Wind Farm remain valid and appropriate for use as part of the assessment of the Development?

Q12.3: Do the Council and consultees have details of any further cumulative developments in the locality which it considers may raise significant issues within the EIA process for the Development? and

Q12.4: Are consultees content to scope out Low Frequency Noise and Infrasound, Amplitude Modulation, Ground Borne Vibration, a detailed assessment of Construction and Decommissioning noise, and noise from the substation?

13 TRAFFIC & TRANSPORT

13.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Traffic and Transportation Chapter of the ES to accompany the application for the Development. It presents the suggested scope of the assessment in terms of those aspects to be scoped in and scoped out of the EIA process based on a preliminary assessment of relevant receptors to the Development.

The Traffic and Transportation Chapter of the ES will consider the effects of vehicle movements to and from the Site associated with construction, operation and decommissioning phases of the Development. Vehicle movements to the Site will likely consist of abnormal load vehicles (for the delivery of turbine components), heavy goods vehicles, light goods vehicles and cars.

The proposed route to site for turbine components is from the Foyle Port (previously Port of Londonderry) then via the A2 Clooney Road, A2 Limavady Road, A5, B49, Art Road, Sentry Road, Moorlough Road and Glenmornan Road. This scoping report will outline the proposed methodology to be employed in the EIA for assessment of Traffic and Transportation effects on the chosen delivery routes and on the wider road network as required.

The proposed route to site for turbine components is the same as that assessed for the consented Craignagapple Wind Farm. The consents for the consented Craignagapple Wind Farm considered 6 turbines, this assessment will consider up to 15 turbines. This assessment will also consider the traffic associated with the decommissioning of nine operational turbines at the operational Owenreagh I Wind Farm.

13.2 Assessment Methodology

13.2.1Abnormal Load Study

An Abnormal Load Route Assessment (ALRA) will be undertaken to confirm that the proposed route can accommodate the increased length of turbine blades and that their transportation will not have any detrimental effect on the proposed haulage route, and will identify any additional off-site improvement works which are required in order to make the route remain viable.

13.2.2 Assessments of Effects

Assessment methodology will follow the 'Guidelines for the Environmental Impact of Road Traffic' ('The IEMA Guidelines'). A screening process using two broad rules outlined in the aforementioned guidelines is used to identify the appropriate extent of the assessment area. These include:

- Highway links where traffic will increase by more than 30% (or where the number of HGVs will increase more than 30%); and
- Any other specifically sensitive areas where traffic flows have increased by 10% or more.

Where the predicted increase in traffic flows is lower than the thresholds, the guidelines suggest the significance of effects can be stated to be low or not significant and further detailed assessments are not warranted. Baseline traffic flow conditions will be established from publicly available information and/or traffic counts to be commissioned at key locations along the construction traffic route as detailed in Section 13.1. The baseline traffic flows would inform the analysis to determine the impact of the development proposals on the road network.

Traffic movements on the public roads resulting from construction, operation and decommissioning will be based on the Development design. Traffic generation will take into account the import of construction materials and the export of surplus materials; and the movement of equipment, construction plant and labour required during each phase of the Development.

Peak traffic flows will be identified to assess a worst-case scenario. An assessment of effects on road safety, driver delay, pedestrian amenity, severance, noise and vibration will be undertaken as appropriate.

In addition to the aforementioned guidance, the Traffic and Transport Chapter will take into account the following statutory guidance documents published by the Department of Regional Development (DRD) Roads Service and Northern Ireland Planning Service:

- SPPS;
- Planning Policy Statement 3 (PPS 3) – Access Movement and Parking;
- Planning Policy Statement 13 (PPS 13) – Transportation and Land Use
- Development Control Advice Note 15 (DCAN 15; 1999);
- Transport Assessment Guidelines for Development in Northern Ireland; and
- Guidelines for Traffic Impact Assessment, Institution of Highways and Transportation (IHT, 1994).

It should be noted that the above list may be subject to change in the case that various policies and guidance are replaced or updated during the delivery of the project.

As Transport Assessments (TA's) principally relate to developments that generate a significant permanent increase in traffic as a direct consequence of function, it is not proposed a formal TA will accompany the application, as wind farm related traffic is temporary in nature and the function will not result in a permanent increase.

13.2.3 Baseline Conditions and Key Sensitivities

Baseline traffic conditions are likely to have changed since preparation of the consented Craignagapple Wind Farm ES, therefore an updated baseline chapter will be provided.

The main sensitives relating to the Development are considered to be:

- Increase in HGV traffic;
- Delay related to the movement of abnormal loads;
- Abnormal road wear and tear; and
- Road widening/improvements to accommodate abnormal loads.

13.3 Scope of Assessment

13.3.1 Scoped In Effects

In accordance with the IEMA Guidelines the following effects will be considered during the assessment:

- Traffic generation;
- Accidents and safety;
- Driver delay;
- Pedestrian amenity;
- Severance;
- Noise and vibration;
- Hazardous loads;
- Pedestrian delay;
- Visual effects; and
- Air quality.

Effects on ecological receptors within the vicinity of haul routes will be addressed in the Ecology chapter of the ES, as outlined in Section 8.

13.3.2Scoped Out Effects

Operational traffic to the Development is expected to be minimal, numbering approximately two vehicle trips per day average. Therefore, the effect of operational traffic will be negligible.

It is not proposed to time limit the operational phase; however, as components within the Development have a finite lifetime decommissioning must be considered. Decommissioning traffic will be less than traffic generated during construction as all below ground infrastructure will be left in place.

As this would occur at least 30 years in the future it is not possible to accurately predict baseline traffic flow levels at that time. Prior to undertaking decommissioning an assessment of transport impacts will be undertaken and agreed with the relevant assessing authorities.

13.4 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q13.1: Do consultees agree with the proposed method of assessment?

Q13.2: Are consultees aware of any specific access restrictions or limitations on the proposed abnormal loads route?

14 LAND USE, SOCIO-ECONOMICS AND TOURISM

14.1 Introduction

This section of the Report defines the proposed methodology and approach to be undertaken for land use, socio-economic and tourism assessment that will be included within the ES.

The socio-economic, land use and tourism Chapter of the ES will bring together related assessments of the likely socio-economic impact of the Development upon the population, economy and use of the land within and around the Development. This section sets out the proposed approach that will be taken in the assessments, together with a summary of information that is currently available.

14.2 Study Area

The ES chapter will consider the following receptor specific study areas:

- Land use: the area taken from the Development, either temporarily during construction and decommissioning or permanently after operation and decommissioning;
- Socio-economics: A number of study areas will be used in the assessment as follows:
  - The demographic profile of the local area (Derry City and Strabane District Council Area) within the context of the regional and national demographic trends;
  - Employment and economic activity in the local area, within the context of the regional and national economic trends;
  - The industrial structure of the local area within the context of the national economies; and
  - The role of the tourism sector in the local and national economy.
- Tourism: the study area comprises the land within the Site and immediately adjacent in considering direct effects, and within 10 km of the Site in considering indirect effects. Effects on recreational routes within 5 km of the Site will be assessed.

14.3 Land Use Methodology

This assessment will consider the potential effect that the Development could have on quality of land use on site, and any impacts the Development would have on the activities within the Site itself.

14.4 Socio-economics Methodology

This assessment will draw from two studies by BiGGAR Economics on the UK onshore wind energy sector, a report published by RenewableUK and DECC in 2012 on the direct and wider economic benefits of the onshore wind sector to the UK Economy [145] and a subsequent update to this report published by RenewableUK in 2015[146]. These reports will provide the input assumptions of the data for the Development is not available.

The Development will result in opportunities for local and regional contractors both for construction and maintenance activities themselves and throughout the supply chain. The investment in the Development has the potential to generate a range of economic and

[145] RenewableUK. (2012). Onshore Wind Direct and Wider Economic Impacts. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48359/5229-onshore-wind-direct--wider-economic-impacts.pdf Accessed 17/06/2021

[146] RenewableUK. (2015). Onshore Wind: Economic Impacts in 2014. Available at: https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/onshore_economic_benefits_re.pdf Accessed 17/06/21

social effects and opportunities for local businesses, most notably employment opportunities and local spending.

Potential economic effects can be divided into:

- Direct effects: for example, employment opportunities in the construction, operation and maintenance and decommissioning of the Development. The nature and scale of the economic effects would depend on the total cost and the sources of the materials and labour. Other direct effects include a community benefit fund and the payment of business rates payable to the local authority throughout the operational phase of the Development;
- Indirect effects: such as employment opportunities created down the supply chain by those companies providing services to the Development during construction, operation and decommissioning; and
- Induced effects: for instance, employment created by the additional spend of wages into the local economy and the purchasing of basic materials, equipment and office space for staff.

The economic impact of the Development upon surrounding settlements will be assessed in terms of the level of employment and contract opportunities the Development could bring. These effects will be assessed for each phase of the Development: construction, operation and decommissioning.

14.5 Tourism Methodology

Tourism and recreation effects will be considered based on the guidance from Guidelines for Environmental Impact Assessment[147] and a Handbook for EIA[148] and consider:

- Tourism and recreation;
- Land-use and ownership; and
- Public attitudes to wind farms.

An assessment of effects upon tourism and recreational resources will be undertaken, taking into account published data on visitor numbers and the value of tourism to the economy of the area. For this, a two-tiered approach will be adopted. Firstly, an assessment of any potential significant effects on community receptor sites and tourism orientated attractions will be undertaken within a 10 km study area (Study Area) of the Site Boundary. Secondly, the assessment will consider any influential community and tourism receptors outside of the Study Area which have the potential to be significantly affected.

Consultation will take place with the following consultees to assess the effects to users of recreational routes:

- The Access Officer at the Council;
- Tourism NI;
- Sustrans (Northern Ireland); and
- Outdoor Recreation NI.

Various existing surveys and assessments of socio-economic and visitor profiles, land use and ownership, and public attitudes to wind farms will be collated to provide background information against which to assess the potential for significant effects.

[147] Institute of Environmental Management and Assessment (IEMA) (2004) Guidelines for Environmental Impact Assessment (IEMA)

[148] SNH (2018) A Handbook for Environmental Impact Assessment, Appendix 6: Outdoor Access Impact Assessment (Version 5). Available online: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf (Accessed 16/06/2021)

14.6 Baseline Conditions / Initial Findings (desk-based/survey)

14.6.1 Land Use

The land use within the Site is primarily improved acid grassland, acid grassland, improved grassland and modified blanket bog with small areas of farmland operational windfarms are also present with further proposed wind farms also consented within the Site. The Site is entirely within the Sperrins AONB. The Site has an elevation from approximately 150 m AOD in the west of the Site, to approximately 400 m AOD in the south of the Site.

There are no recognised footpaths identified within the Strabane Town & District Map[149] which pass through or along the Site Boundary. There are no inhabited properties located within the Site.

14.6.2 Socio-economics

The Site is located approximately 5 km east of Strabane, in County Tyrone, as shown in Figure 1.1 of Appendix B of this Scoping Report. Strabane comprises of a population of 13,172 people according to the 2011 census[150]. In 2018, the Derry City and Strabane District Council (DCSDC) was estimated to have a population of 150,680, with 33.5% and 14.9% of that being under the age of 25, and over 64, respectively. This is compared to 31.9% and 16.4% of Northern Ireland's population being under the age of 25, and over 64, respectively[151].

Currently, there is a 61.66% employment rate in within the 16-64 age range in DCSDC, with 34.1% economically inactive. This shows a significantly lower employment rate than the national average, which is 70% and 27.2% respectively. The largest employment sector for the region is the 'Human Health and Social Work' sector which employed 11,310 employees in 2017, the equivalent of 20.3% of the workforce[152].

The nearest settlements to the Development include Glenmornan, Strabane, Artigarvan and Ballynamallaght. The assessment will consider effects arising from the Development such as job creation and use of local services.

The Development will result in contract opportunities for local and national contractors both for construction activities themselves and throughout the supply chain. The investment in the Development has the potential to generate a range of economic and social effects and opportunities for local businesses, most notably employment opportunities and local spending.

14.6.3 Tourism

Tourism can be seen to contribute a significant amount of money into DCSDCs economy every year. In 2018, there were an estimated 334,874 overnight trips spent in the area with an estimated total of 1,025,913 nights spent staying in the area. These trips are estimated to have brought £55,433,203 into the local economy. Of these visitors, it is estimated that 45% of these were visiting from elsewhere in Northern Ireland, with 28% visiting from Great Britain, and 7% visiting from the rest of Europe[153]. These visits and

[149] Derry City & Strabane - Strabane Map (derrystrabane.com) (accessed 09/06/21)

[150] NISRA (2017) Census 2011 Population Statistics for Strabane Settlement [Online] Available at: NINIS: Northern Ireland Neighbourhood Information Service (nisra.gov.uk) (accessed 08/06/2021)

[151] NISRA (2018) Derry and Strabane, Population Estimates [Online] https://www.derrystrabane.com/getmedia/5f6bdfee-61bb-44e7-912b-cfa4fb2cda6a/A-Population-estimates-040719.pdf (accessed 24/06/2021)

[152] NISRA (2018) Derry and Strabane, Economy and Labour Market [Online] https://www.derrystrabane.com/Subsites/Derry-and-Strabane-Statistics/Economy-and-Labour-Market (accessed 24/06/2021)

[153] NISRA (2018) Derry and Strabane, Tourism https://www.derrystrabane.com/getmedia/d43ad189-ea0c-4c56-9547-750a156e6c54/Tourism-250719.pdf (accessed 24/06/2021)

overnight stays support over 4,685 tourism jobs which make up 8.7% of the total jobs in the DCSDC[154].

The Development is located within the Sperrins AONB with a number of peaks located around, but not within, the Site. Owenreagh Hill is located to the south (453 m AOD), and Evish Hill to the west (249 m AOD). There is also one water body nearby in Moor Lough, which is 0.44 km northeast of the Site Boundary. These peaks, and the general area provide tourism opportunities such as hillwalking, and other outdoor adventure activities based on the natural environment. Moor Lough is also a popular angling destination. The value of these tourism assets is highlighted in that 72% of DCSDC residents spend leisure time outdoors at least once a week according to the Continuous Household Survey[155]. Near to the Site Boundary, Moor Lough Angling, Wilson Ancestral Home and the Ballyskeagh Stables are popular tourist destinations with many other businesses catering to visitors through the provision of accommodation, food or activities.

A desk study will be conducted to identify any local or national tourism receptors that may be affected by the Development. Key attractions will be identified through consultation and from online sources including the Derry City and Strabane District Council and Tourism Northern Ireland websites. These are detailed in Table 14.1. In addition, local knowledge gained through public consultation and site visits will be incorporated into the assessment wherever relevant.

Table 14.1: Local Tourism and Recreation Receptors within 10 km of the Site

Tourism and Recreation Resource	Amenities	Location
Sperrins AONB	Walking, Horse Riding	Development is located entirely within the Sperrins AONB
Moor Lough	Angling	0.5 km north-east of the Site
Highway to Health -Balix Hill walk	Walking	2.6 km east of the Site
Highway to Health - Bradkeel Forest	Outdoor activities including woodland walks, horse riding	6.5 km east of the Site
International Appalachian Trail	Walking	8.3 km south-east of the Site
Ballyskeagh Stables	Horse riding	3.1 km north-west of the Site
Clogherny Wedge Tomb		4.3 km east of the Site
Wilson Ancestral Home		3.6 km west of the Site
Strabane Golf Club	Golfing	6.2 km west of the Site
Lough Ash	Angling	4.4 km north east of the Site
Hill Valley Golf Centre	Golfing	7.9 km south west of the Site
Foyle Canoe Trail	Canoeing	6.6 km west of the Site
Strabane Cricket Club	Sports/Cricket	6.3 km west of the Site
Strabane Sigersons Gaelic Athletic Club	Sports	5.68 km west of the Site
Melvin Sports Complex	Sports	5.9 km west of the Site
Strabane Canal	Canal boating	6.7 km north west of the Site

[154] Derry City and Strabane District Council (2021) Tourism Derry City & Strabane - Tourism (derrystrabane.com) (accessed 24/06/2021)

[155] NISRA (2018) Derry and Strabane, Tourism https://www.derrystrabane.com/getmedia/d43ad189-ea0c-4c56-9547-750a156e6c54/Tourism-250719.pdf (accessed 24/06/2021)

Tourism and Recreation Resource	Amenities	Location
National Cycle Network routes and Links within 15 km radius	Cycling Route	6.8 km west of the Site

14.7 Scoped In Effects

The following effects are scoped in:

- Land use effects within the Site boundary;
- Direct and indirect socio-economic effects; and
- Effects on recreational routes within 5 km, and all other tourism receptors within 10 km.

14.8 Scoped Out Effects

The following effects are scoped out:

- Land use effects outside of the Site;
- Effects on tourism receptors greater than 10 km from the Site; and
- Effects on recreational routes greater than 5 km from the Site.

14.9 Key Questions for the Council / Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q14.1: Are Consultees aware of any key sensitive tourism and recreation receptors that should be taken into account?

Q14.2: Are the Consultees aware of any additional data sources to inform the land use, socio-economic and tourism assessments?

Q14.3: Are Consultees aware of any additional relevant consultees not accounted for above?

Q14.4: Do Consultees agree with the scope of assessments?

15 OTHER ISSUES

15.1 Introduction

The Other Issues chapter of the ES will assess the likely impact of the Development upon receptors surrounding the Site Boundary which are not covered in other technical disciplines. This section sets out the proposed approach in respect of additional assessments that are required in order to provide a comprehensive assessment of the likely environmental impacts of the Development together with a summary of information that is currently available.

15.2 Climate Change and Carbon Balance

The aim of the Climate Change Impact Assessment (CCIA) section is to determine how the Development is likely to interact with a changing climate and whether any significant effects could arise. CCIA is a new form of environmental assessment required by the amended EC Directive 2014/52/EU1, as transposed into UK law by the EIA Regulations.

IEMA published 'Environmental Impact Assessment Guide to: Climate Change Resilience & Adaption[156] in June 2020 as a revision to the 2015 guidance. At the time of writing, no update to these guidelines has been published. Accordingly, the proposed CCIA methodology was developed in line with the 2020 IEMA guidance and IEMA's complementary report 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'[157] in order to establish a comprehensive assessment methodology. This methodology focusses on the following elements:

- Assessment of the Development's effects on climate change (calculation of carbon footprint based on best practice guidelines, e.g., Scottish Government Carbon Calculator Tool[158], in the absence of any equivalent guidance in NI) to include calculation of greenhouse gas emissions relating to construction, operation, decommissioning and the production of electricity;
- Assessment of the Development's vulnerabilities and resilience in the context of climate change by identifying appropriate climate change projections and climate change effects; and
- Assessment of the Development's effects upon identified environmental receptors in the context of the emerging baseline.

The most recent climate change projection iteration, UKCP18, has identified the following climatic trends as a result of climate change:

- Increase temperature;
- Changes in the frequency, intensity and distribution of rainfall events (e.g., an increase in the contribution to winter rainfall from heavy precipitation events and decreases in summer rainfall);
- Increased windstorms; and
- Sea level rise.

[156] IEMA. (2020). *Environmental Impact Assessment Guide to: Climate Change Resilience & Adaption.* Available at: https://www.iema.net/assets/newbuild/Policy%202020/IEMA%20EIA%20Climate%20Change%20Resilience%20June%202020.pdf (Accessed 03/07/2021)

[157] IEMA. (2017). *Assessing Greenhouse Gas Emissions and Evaluating their Significance*. Available at: https://www.iaia.org/pdf/wab/EIA%20Guide_GHG%20Assessment%20and%20Significance_IEMA_16May17.pdf (Accessed 03/07/2021)

[158] Scottish Government. (2018). *Carbon Calculator Tool v1.4.0.* Available at: https://informatics.sepa.org.uk/CarbonCalculator/index.jsp (Accessed 03/07/2021)

Potential effects include:

- Effects of the Development on climate change;
- Effects of climate change on the Development; and
- Effects of climate change assessments made in other topics of the EIA.

The Development will be inherently designed to reduce adverse climate change effects by offsetting the production of carbon dioxide through use of renewable sources for generating electricity. The current baseline with respect to greenhouse gas emissions from existing methods of electricity generation (including the operational turbines onsite) will be identified using existing data from the UK Government, operational sites, and experience of other similar developments. This information will provide the baseline information against which to assess the contribution of the Development to reducing greenhouse gas emissions and potential for significant effects.

It is proposed that the assessment of the Development's effects on climate change will be scoped into the EIA at this stage, given the associated carbon reduction properties of wind farms and the potential for peat disturbance. This will be assessed using the Scottish Government's Carbon Calculator Tool; as noted earlier in this section, there is no equivalent guidance in NI. Further guidance will also be sought from consultees as to what is expected within this assessment.

Renewable energy is being promoted in Northern Ireland as a means of reducing carbon emissions. Within the ES, a Section will provide details on the expected carbon savings which as predicted as a result of the operation of the Development.

15.3 Shadow Flicker

Under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. Shadow flicker is an effect that can occur when the shadow of a blade passes over a small opening (such as a window), briefly reducing the intensity of light within the room, and causing a flickering to be perceived. Shadow flicker effects can only occur inside buildings when the blade casts a shadow across an entire window opening.

In the UK, the shadow flicker effect has the potential to occur within 130 degrees either side of north relative to the turbine positions, as turbines do not cast long shadows on their southern side. It is also known that the effect is only likely to occur within 10 rotor diameters of turbines[159]. Careful site selection, design and planning can help to avoid the possibility of shadow flicker in the first instance. Since the final layout and candidate turbine have yet to be selected, it is difficult to determine whether or not the Development will have a significant effect on the surrounding properties from shadow flicker.

In line with PPS18 requirements, an assessment will be undertaken to determine whether or not there will be any impacts on surrounding properties. This will examine all properties which lie within 10 rotor diameters and 130 degrees either side of north from each turbine. Resoft WindFarm, a computer modelling programme, will be used to model the potential effects at surrounding properties to quantify the potential effects.

It is proposed that the Northern Irish Guidance is applied for the purposes of the assessment:

- Worst case scenario- 30 hours per year or 30 minutes per day; and
- Realistic scenario- 8 hours per year.

Should these limits be exceeded, the Applicant would implement mitigation measures to minimise or prevent effects where appropriate.

[159] Irish Wind Energy Association (2012) *Best Practice Guidelines for the Irish Wind Energy Industry*, Available at: https://www.iwea.com/images/files/9660bdfb5a4f1d276f41ae9ab54e991bb600b7.pdf (Accessed: 28/06/2021)

15.3.1 Scoped out Effects

Reflectivity is the potential for the sun to 'glint' off structures which, in the case of wind turbines, can be an intermittent glint when the turbines are rotating. Due to the intermittent nature of reflectivity, it is proposed that it is scoped out of the EIA. This effect will be further minimised by selecting a matt coating for the wind turbines, designed to reduce the potential for reflection.

15.4 Aviation

Since many issues must be considered when assessing the potential effect of the Development on aviation, the local Air Navigation and Air traffic Services Providers are best placed to provide expert interpretation of what those impacts might be and how they might affect safety, efficiency and flexibility of their operations. There is a well-established regulatory and policy framework that has been in force for a number of years, but which has been the subject of constant amendment and updating.

Where there is line of sight between turbines and air traffic controls radars, it is possible that the turbines may be detected by the radar dependant on atmospheric conditions, and appears as clutter on the controllers' screens; such clutter can have a direct operational impact on air traffic control operations.

Potential effects on other aviation interests will be evaluated by considering the consultation responses in the context of the likelihood of identified aviation operators using the airspace in the vicinity of the Development.

15.4.1 Baseline Conditions

The nearest aviation receptors to the Site are as follows:

- Belfast International Airport, located 72 km east of the Site;
- George Best Belfast City Airport, located 95 km east of the Site;
- City of Derry Airport, located 26 km north of the Site; and
- Donegal Airport, located 68 km west of the Site.

Analysis of NATS En-Route PLC self-assessment maps for turbines up to 200 m illustrates that the Development is unlikely to be visible to any NERL receptors.

15.4.2 Suggested Methodology

The general approach to wind farm development is to avoid adverse effects on aviation infrastructure where possible, and to find appropriate technical mitigation solutions where this cannot be achieved. Policy guidance and extant regulations in respect of the potential interference effects of wind turbines on air traffic control radars are highlighted in civil and military publications. Furthermore, there are airfield physical safeguarding and telecommunication and navigational infrastructure safeguarding requirements.

Consultation with relevant aviation providers is a routine part of wind development relation to the Development the following consultees have been identified:

- Ministry of Defence (Defence Infrastructure Organisation);
- National Air Traffic Services (NATS);
- Civil Aviation Authority (CAA);
- City of Derry Airport;
- Belfast International Airport;
- George Best Belfast City Airport; and
- Donegal Airport.

A search for private airfields will be conducted in parallel with the consultation process, and any identified airfields will also be consulted on the proposed turbine development.

15.4.3Aviation Lighting

The UK statutory requirements for the lighting of en–route obstacles (i.e., those away from the vicinity of a licensed aerodrome) are set out in Article 222 of the UK Air Navigation Order (ANO) 2016. In June 2017 the CAA issued a policy statement clarifying the requirements for lighting onshore wind turbines over 150m in height.

Under Article 222 (5), the CAA may direct that an en-route obstacle must be fitted with and must display such additional lights in such positions and at such times as it may specify. The policy statement describes a scenario with a red light fitted as close as possible to the top of the fixed structure i.e., the nacelle with additional lights to provide 360^{o} coverage at half of the nacelle height on the turbine tower.

The Applicant is investigating alternatives to visible red lighting including smart lighting solution whereby any aviation warning lights are switched on only when there is air traffic in the vicinity of the site, rather than having them on during all hours of darkness.

15.4.4Scoped In Effects

Whilst it is anticipated that due to the location of the Development is unlikely cause a significant impact to aviation interests. The scope of any aviation impact assessment, if required, will be based on the outcome of consultation discussions with the relevant aviation consultees.

The effects of aviation lighting will be included in the ES, should visible red lights be required during hours of darkness on all turbines, or if there is uncertainty surrounding which form of lighting will be utilised. Visible red lighting is deemed to be the worst-case scenario.

15.4.5Scoped Out Effects

Should the use of infra-red lighting be a viable option, the effects of aviation lighting, as mentioned in Section 6.7, may be scoped out. However, if an alternative method of lighting is used (i.e., a smart lighting solution), the effects of aviation lighting will be assessed within the ES. This will be determined through further consultation with the CAA and other consultees responsible for air safety.

15.5 Telecommunications, Television Reception & Utilities

Wind farms produce electro-magnetic radiation which has the potential to interfere with broadcast communications and signals.

In order to determine the potential impact of the Development, initial consultation will be undertaken with the following consultees:

- Spectrum Licensing - Ofcom (Northern Ireland);
- Television and telecommunications providers as appropriate; and
- Water, gas and electricity utilities providers;

Additional scoping work will identify all fixed link radio facilities, all broadcast television and radio transmitters within up to 2 km of the site.

The probability of a significant impact on fixed radio links and broadcast television signals will be assessed on the basis of site proximity to transmitter-receiver paths and rebroadcast links and calculation of Ofcom-recommended clearance zones. Potential charges to the telecommunications environment as a result of the Development will be predicted by an assessment of the proximity of turbines to radio facilities and consultations with Ofcom.

Determination of the impact of the Development will be determined principally through consultation with operators of the radio and television facilities.

15.5.1 Scoped out effects

The Development will be designed to ensure that there are no effects on telecommunication links. Ongoing consultation with relevant consultees will ensure any potential effects are identified.

15.6 Human Health and Safety, Including Major Accidents & Disasters

A series of elements will be covered as part of the review of Human Health effects, this will summarise the findings of relevant assessments already assessed as part of the EIA where interactions with Human Health are possible, including the following:

- Traffic and Transportation;
- Noise; and
- Socio-economics, Recreation and Tourism.

Health and Safety during the construction and decommissioning phases of the Development will be subject to relevant legislation and best practice. This will involve site inductions, risk assessment and method statements as implements by the Construction Management Plan (CMP). Therefore, there is no further requirement for Health and Safety to be assessed within the EIA and it is scoped out of further assessment.

The EIA Regulations state that an EIA must identify, describe and assess in an appropriate manner, the expected effects deriving from the vulnerability of the Development to risks, so far as relevant to the Development, of major accidents and natural disasters.

Relevant information available and obtained through risk assessments pursuant to legislation of the European Union such as Directive 2012/18/EU of the European Parliament[160] on the control of major accident hazards involve dangerous substances. The Directive lays down rules for the prevention of major accidents which might result from certain industrial activities and the limitation of their consequences for human health and the environment. Directive 2012/18/EU requires the preparation of emergency plans and response measures which will be covered under equivalent documents relevant to the nature of the Development. Throughout all phases of the Development, cognisance should be made through the following guidance documents produced by Renewable UK:

- Wind Turbine Safety Rules Third Edition[161];
- Guidance & Supporting Procedures on the Application of Wind;
- Turbine Safety Rules Third Edition[162]; and
- Onshore Wind Health & Safety Guidelines[163].

The risk of a major accident could be increased by the probability of natural disasters associated with the location of the Development. This should be considered during the preparation of major accident scenarios.

The Development is not located within an area known for natural disasters such as floods, hurricanes, tornadoes, volcanic eruptions, earthquakes or tsunamis. At over100 m AOD and at least 30 km from the coast, the Development is not at risk from tsunamis and there are no known volcanoes nearby. As the most probable of natural disasters to affect the

[160] European Union (2012) Directive 2012/18/EU Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0018 (Accessed 03/07/2021)

[161] Renewable UK (2015) Wind Turbine Safety Rules. Third Edition. Available at: https://c.ymcdn.com/sites/www.renewableuk.com/resource/resmgr/Docs/Health_&_Safety/WindTurbineSafetyRulesIssue3.pdf (Accessed 03/07/2021)

[162] Renewable UK (2015) Guidance & Supporting Procedures on the Application of Wind Turbine Safety Rules. Third Edition Available at: https://c.ymcdn.com/sites/www.renewableuk.com/resource/collection/AE19ECA8-5B2B-4AB5-96C7-ECF3F0462F75/Wind-turbine-safety-rules-guidance.pdf (Accessed 03/07/2021)

[163] Renewable UK (2015) Onshore Wind Health and Safety Guidelines Available at: https://c.ymcdn.com/sites/www.renewableuk.com/resource/collection/AE19ECA8-5B2B-4AB5-96C7-ECF3F0462F75/OnshoreWind_HealthSafety_Guidelines.pdf (Accessed 03/07/2021)

Development, flood risk will be assessed within the hydrological assessment in the ES. It is noted that the Development is not located in an area of flood risk.

None of the identified climate change trends listed will affect the Development with the exception of increased windstorms. Brake mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced then the turbines would be shut down. Although an unlikely event in the area, the brake mechanisms could also apply to a hurricane scenario.

The Development is not located within an area prone to such disasters and the likelihood of such an event is extremely rare. Therefore, it is concluded that no significant effects will arise due to major accidents and natural disasters as a result of the Development, and this topic can be scoped out of the EIA.

15.6.1 Scoped out Effects

It is proposed that the Development's vulnerabilities and resilience to climate change can be scoped out of the EIA. None of the identified climate change trends could affect the Development with the exception of increased windstorms. Braking mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced then the turbines would be shut down. In addition, given the elevated location of the Development, flooding will not pose a significant risk to the operation of the windfarm nor will the construction of a windfarm contribute to flooding elsewhere. Therefore, it is concluded that no significant effects will arise, as a result of the Development, and this topic can be scoped out.

In addition, the Development is not located within an area prone to such disasters and the likelihood of such an event is extremely rare. Therefore, it is concluded that no significant effects will arise due to major accidents and natural disasters as a result of the Development, and this topic can be scoped out of the EIA.

Properly designed and maintained wind turbines are a safe technology. The Development design and inbuilt buffers from sensitive receptors will minimise the risk to humans from the operation of the turbines. Risks associated with ice build-up and lightning strike are removed or reduced through inbuilt turbine mechanisms in modern machines, and as such can be scoped out at this stage.

All other potential interactions with Human Health including Health and Safety best practice, ice, lightning strike and structural failures are unlikely to occur and therefore to give rise to potentially significant effects and as such have been scoped out of further assessment at this stage.

15.7 Key Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q15.1: Are consultees content with the list of aviation consultees proposed, and are consultees aware of any private airfields within 30 km of the Development?

Q15.2: Are consultees content to scope out the Development's vulnerabilities and resilience to climate change?

Q15.3: Should no properties fall within ten rotor diameters and 130 degrees of north of the Development, are consultees content that shadow flicker effects can be scoped out of the EIA?

Q15.4: Do consultees agree with the suggested approach regarding Human Health?

Q15.5: Are consultees content to scope out Major Accidents and Disasters from further assessment?

16 APPENDIX A: LIST OF CONSULTEES

DfI Roads

DAERA Northern Ireland Environment Agency

Shared Environmental Services

DfI Rivers Agency

Derry City & Strabane District Council Environmental Health Department

DfC Historic Environment Division

Geological Survey Northern Ireland

RSPB NI

DfE Energy Division

NIE Windfarm Developments

NI Water- Strategic Applications

Everything, Everywhere Ltd

Ofcom Northern Ireland

National Air Traffic Services

Arquiva Services Ltd

CAA Directorate of Airspace Policy

Vodafone (formerly Cable & Wireless)

UK Crown Bodies- D.I.O Safeguarding

17 APPENDIX B: FIGURES

Figure 1.1: Site Location Plan

Figure 2.1: Indicative Site Layout Plan

Figure 6.1: LVIA Study Area

Figure 6.2: Blade Tip ZTV and Viewpoint Locations

Figure 6.3: Blade Tip ZTV and Landscape Character

Figure 6.4: Blade Tip ZTV and Landscape Designations

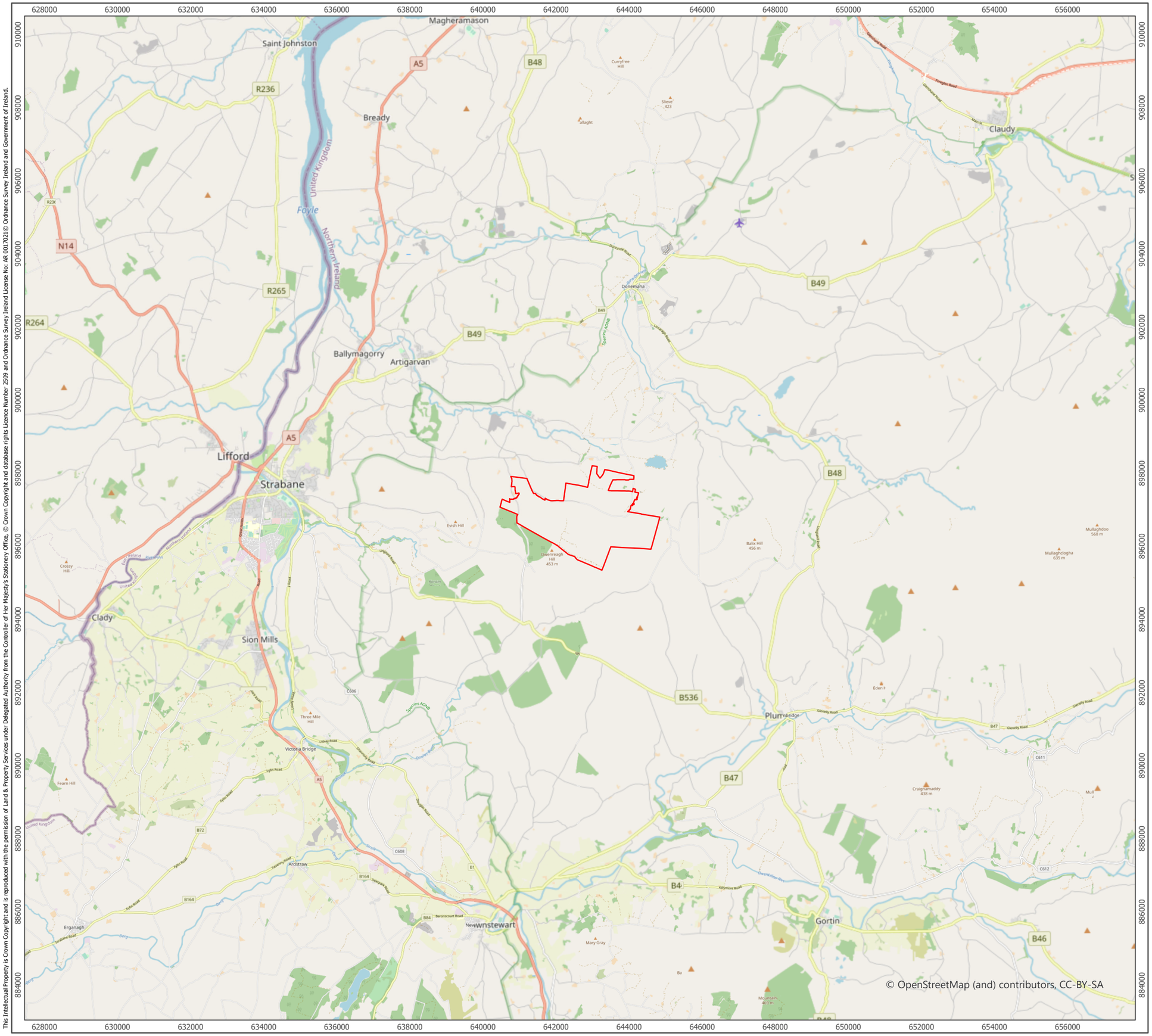
Figure 6.5: Blade Tip ZTV and Visual Receptors

Figure 6.6: Cumulative Wind Farms

Figure 7.1: Designated Sites

Figure 11.1: Cultural Heritage Designations

Figure 12.1: Indicative Noise Study Area



Ørsted

ARCUS

Site Boundary

1:100,000 Scale @ A3

0 2 4 km

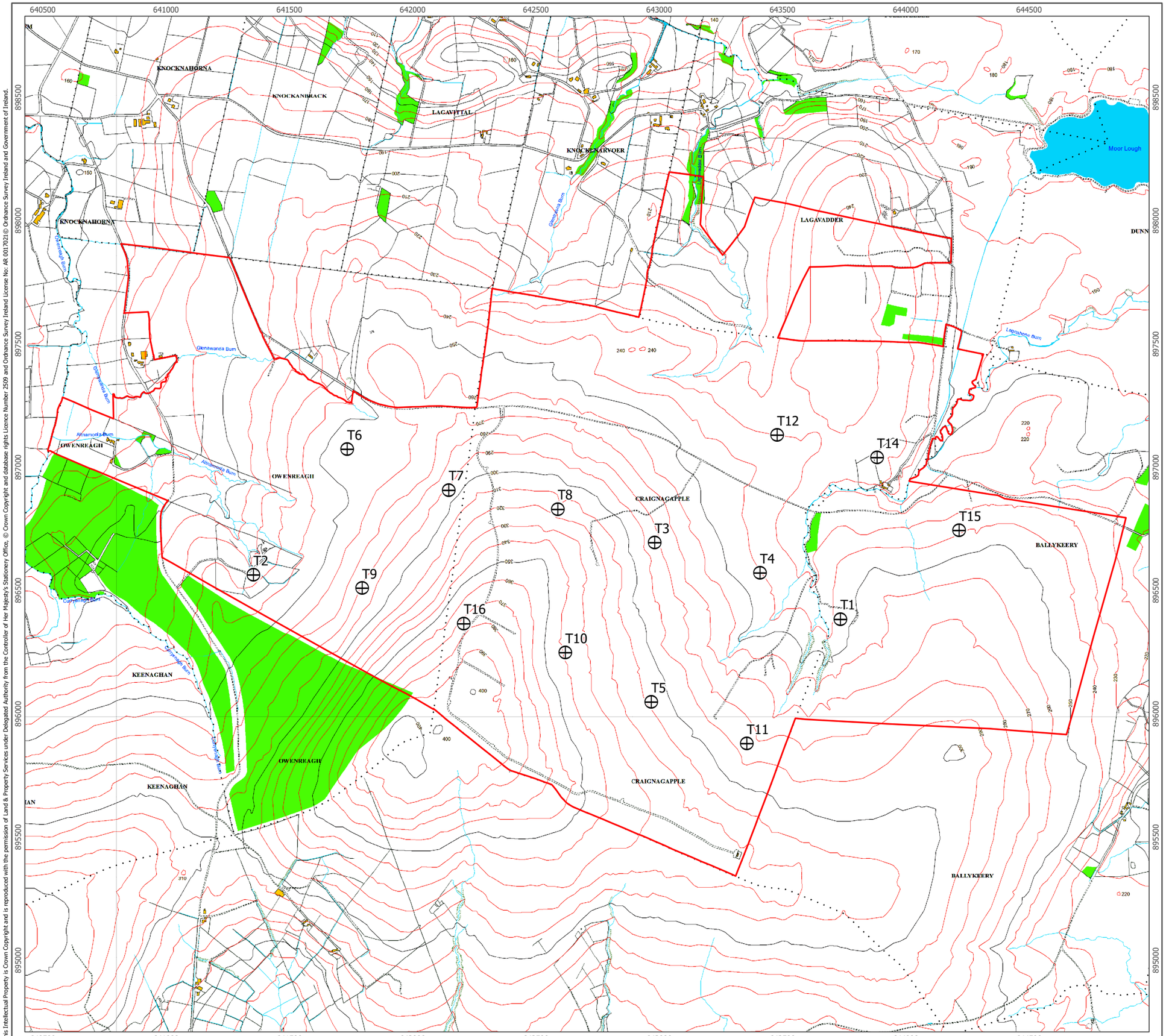
NORTH

Produced By: FC	Ref: 4172-REP-003
Checked By: RM	Date: 15/06/2021

Site Location Plan
Figure 1.1

Owenreagh I Repower and Craignagapple Extension Scoping Request

P:\GIS\Environment\4172 Owenreagh Wind Farm Repowering\4172 Owenreagh Wind Farm Repowering.aprx\4172-REP-003 Fig1.1 Site Location Plan



P:\GIS\Environment\4172 Owenreagh Wind Farm Repowering\4172 Owenreagh Wind Farm Repowering.aprx\4172-REP-004 Fig2.1 Indicative Site Layout Plan

Ørsted

ARCUS

Site Boundary

Proposed Tubrine Location

1:15,000 Scale @ A3

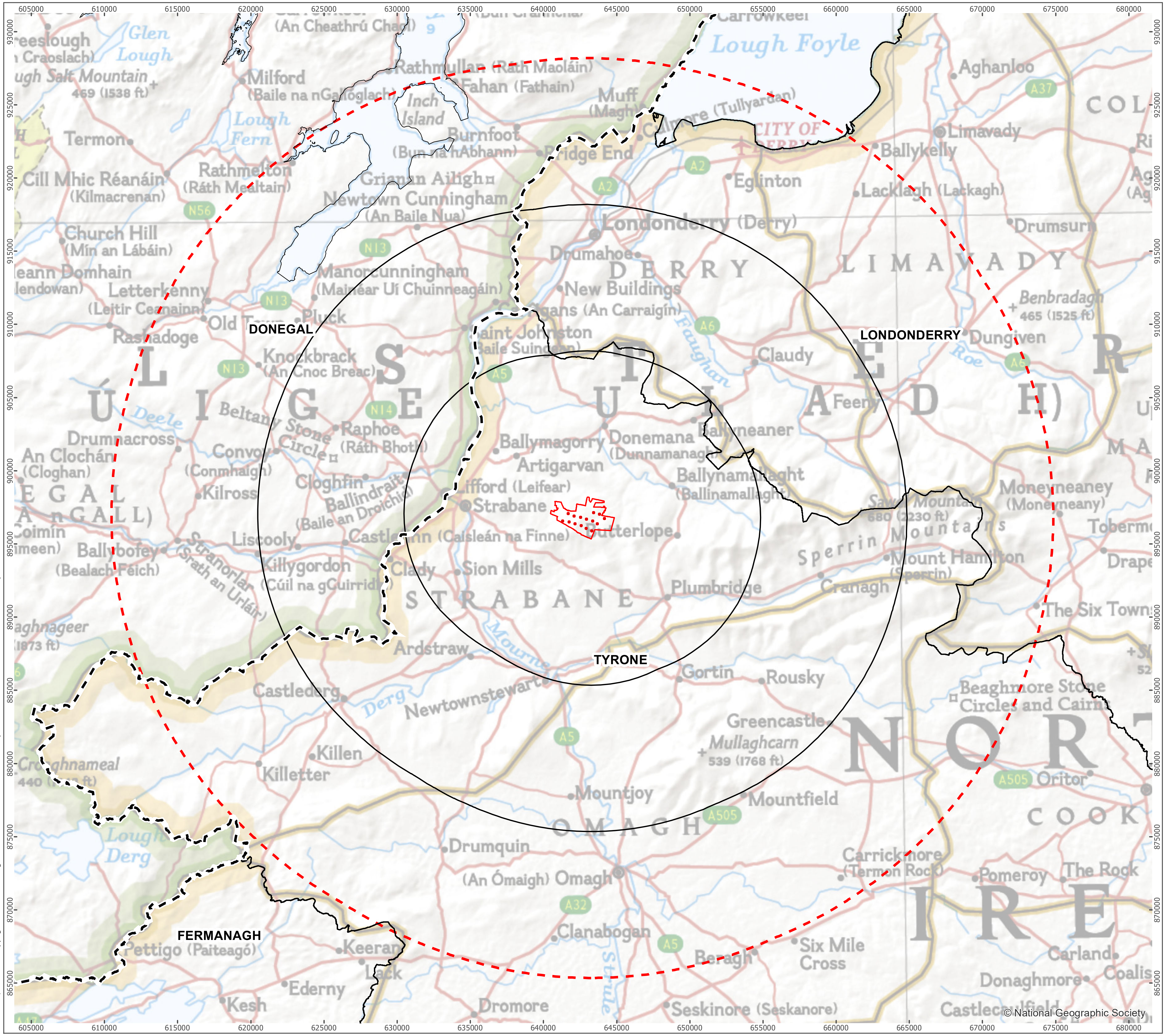
0 250 500 Meters

NORTH

Produced By: FC	Ref: 4712-REP-004
Checked By: RM	Date: 16/06/2021

Indicative Site Layout Plan
Figure 2.1

Owenreagh I Repower and Craignagapple Extension Scoping Request



Wind Turbine
Site Boundary
10km Radii
30km Study Area
County Boundary
NI/RoI Boundary Line

1:250,000 Scale @ A3

0 5 10 km

NORTH

Produced By: TH	Ref:
Checked By: JP	Date: 23/06/2021

Study Area
Figure 6.1

Owenreagh I Repower and Craignagapple Extension Scoping Request

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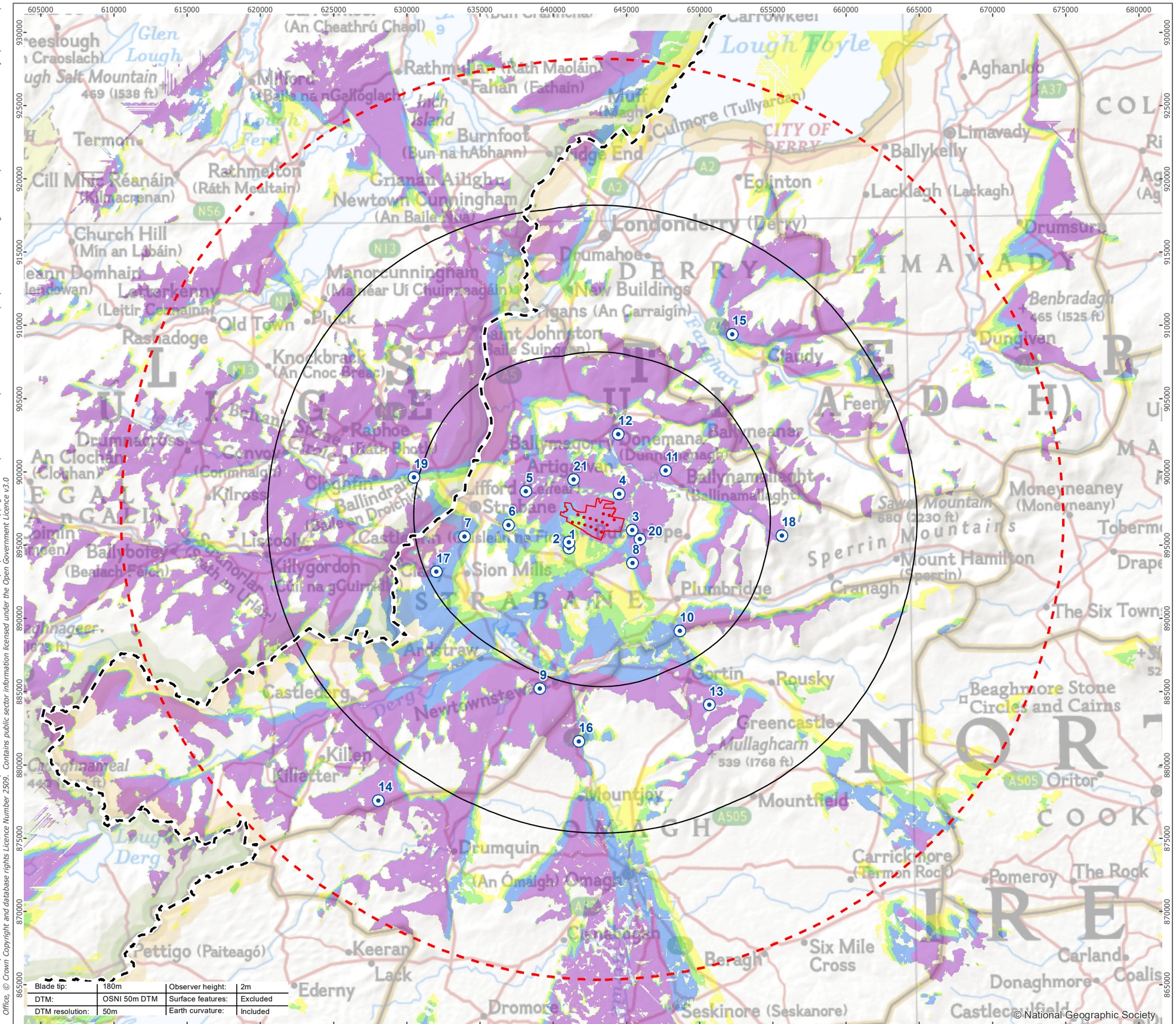

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open
optimised environments

Ørsted ARCUS

- Wind Turbine
- Site Boundary
- 10km Radii
- 30km Study Area
- NI/RoI Boundary Line
- Viewpoint Location

Blade Tip ZTV

No. of Blade Tips Theoretically Visible

- 1 - 4
- 5 - 8
- 9 - 12
- 13 - 15

1 - Koram Road, Ligfordrum
2 - Koram Road, Ligfordrum 2
3 - Napple Road, Ballykeery Bridge
4 - Moor Lough Picnic Area
5 - Holyhill Road, Holy Hill
6 - President Wilson's House
7 - Strathmourne Road, Strathbane
8 - Victoria Bridge
9 - Harry Avery's Castle
10 - Slievbeg Road, Slievbeg
11 - Ballynamallaght
12 - B48 Dunnamanagh
13 - Lenamore Picnic Area, Gortin
14 - Ulster Way at Borlaght Mountain
15 - Foreglen Road, Killaloo
16 - A5 Strule River Valley
17 - Bells Park Road, Glebe
18 - Mullaghclogha, Sperrin Mountains
19 - Ballindrait
20 - Meendamph Road, Crockrour Road
21 - Glenmornan

1:249,979 Scale @ A3

0 5 10 km

NORTH

Produced By: TH	Ref:
Checked By: JP	Date: 23/06/2021

Blade Tip ZTV and Viewpoint Locations
Figure 6.2

Owenreagh I Repower and Craignagapple Extension Scoping Request

Blade tip:	180m	Observer height:	2m
DTM:	OSNI 50m DTM	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included

open
optimised environments

Ørsted ARCUS

- Wind Turbine
- Site Boundary
- 10km Radii
- 30km Study Area
- NI/RoI Boundary Line

Blade Tip ZTV
No. of Blade Tips Theoretically Visible

- 1 - 4
- 5 - 8
- 9 - 12
- 13 - 15

Northern Ireland Landscape Character Assessment, 2000

- 14 - Lough Bradan
- 15 - Irvinestown Farmland
- 19 - Killeter Uplands
- 20 - Derg Valley
- 21 - Fairy Water Valley
- 22 - Omagh Farmland
- 23 - Camowen Valley
- 24 - South Sperrin
- 25 - Beaghmore Moors & Marsh
- 26 - Bessy Bell and Gortin
- 27 - Foyle Valley
- 28 - Glenelly Valley
- 29 - Sperrin Mountains
- 30 - Sperrin Foothills
- 31 - Burngibbagh & Drumahoe
- 32 - Derry Slopes
- 33 - Lough Foyle Alluvial Plain
- 34 - Loughermore Hills
- 36 - Binevenagh
- 37 - Roe Basin
- 40 - Upper Moyola Valley
- 41 - Slieve Gallion
- 43 - Carrickmore Hills

Landscape Character Assessment

- 7 - Lough Foyle Coast
- 8 - Buncrana Coast
- 9 - Scalp Mountains
- 10 - South Inishowen Farmland
- 11 - Grianin Slopes & Lowlands
- 12 - Laggan Valley
- 13 - Foyle Valley
- 14 - Finn Valley
- 15 - Letterkenny Estuary & Farmland
- 16 - Cark Mountain & Upland
- 18 - Lough Fern
- 19 - Rathmelton Swilly Coast
- 40 - Cashelnavern Border & Uplands
- 43 - Pettigo & Drumlins

1:250,000 Scale @ A3

0 5 10 km

NORTH

Produced By: TH	Ref:
Checked By: JP	Date: 23/06/2021

Blade Tip ZTV and Landscape Character
Figure 6.3

Owenreagh I Repower and Craignagapple Extension Scoping Request

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BALLYARNET
GLENGALLIAGH HALL
BROOK HALL
THORNHILL
ENAGH HOUSE
BELMONT HOUSE
ABERFOYLE
BOOM HALL
BROOK PARK
ST. COLUMBS
TEMPLEMOYLE (Muff Glen)
GOVERNMENT HOUSE
ASHBROOK
BEECH HILL
MOLENAN HOUSE
ARDMORE
THE OAKS
PELLIPAR
KNOCKAN / ASH PARK
LEARMOUNT
HOLY HILL/
HOLLY HILL HOUSE
MOYLE HOUSE
BELTRIM CASTLE
BARONS COURT
LISNAMALLARD HOUSE
CREEVENAGH
EDENFEL

Blade tip:	180m	Observer height:	2m
DTM:	OSNI 50m DTM	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included

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open optimised environments

Ørsted ARCUS

- Wind Turbine
- Site Boundary
- 10km Radii
- 30km Study Area
- NI/RoI Boundary Line
- Sperrin AONB
- Historic Parks & Gardens
- Area of High Scenic Value [1]
- Area of Especially High Scenic Amenity [2]

Blade Tip ZTV

No. of Blade Tips Theoretically Visible

- 1 - 4
- 5 - 8
- 9 - 12
- 13 - 15

Notes:
[1] Derry City and Strabane Development Plan, 2011
[2] County Donegal Development Plan 2018-2024

1:250,000 Scale @ A3

0 5 10 km

NORTH

Produced By: TH	Ref:
Checked By: JP	Date: 23/06/2021

Blade Tip ZTV and Landscape Designations
Figure 6.4

Owenreagh I Repower and Craignagapple Extension Scoping Request

Blade tip:	180m	Observer height:	2m
DTM:	OSNI 50m DTM	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included

open
optimised environments

Ørsted ARCUS

- Wind Turbine
- Site Boundary
- 10km Radii
- 30km Study Area
- NI/RoI Boundary Line

Roads - Northern Ireland
- A Road
- B Road

Roads - Republic of Ireland
- National Primary Road
- National Secondary Road
- Regional Road

- Causeway Coastal Driving Route
- Sperrins Route
- National Cycle Network
- Ulster Way
- Wild Atlantic Way
- Donegal Coastal Cycle Route

Blade Tip ZTV

No. of Blade Tips Theoretically Visible
- 1 - 4
- 5 - 8
- 9 - 12
- 13 - 15

1:250,000 Scale @ A3

0 4.5 9 km

NORTH

Produced By: TH	Ref:
Checked By: JP	Date: 23/06/2021

Blade Tip ZTV and Visual Receptors
Figure 6.5

Owenreagh I Repower and Craignagapple Extension Scoping Request

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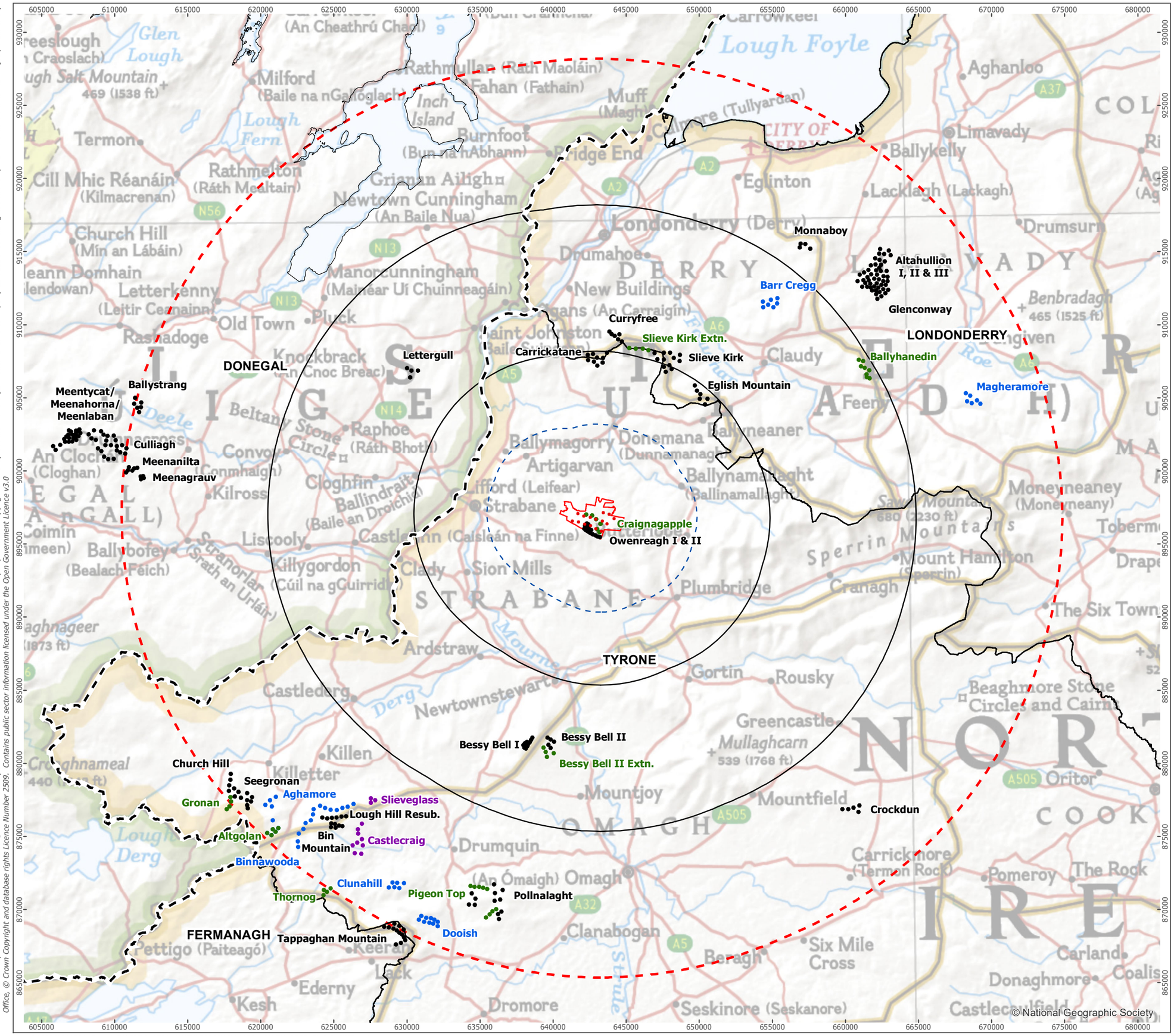

open
optimised environments

Ørsted ARCUS

- Wind Turbine
- Site Boundary
- 5km Radius
- 10km Radii
- 30km Study Area
- County Boundary
- NI/RoI Boundary Line

Wind Farm Status:

- Application/Appeal
- Consented
- Under Construction
- Operational

1:250,000 Scale @ A3

0 5 10 km

NORTH

Produced By: TH	Ref:
Checked By: JP	Date: 23/06/2021

Cumulative Wind Farms
Figure 6.6

Owenreagh I Repower and Craignagapple Extension Scoping Request

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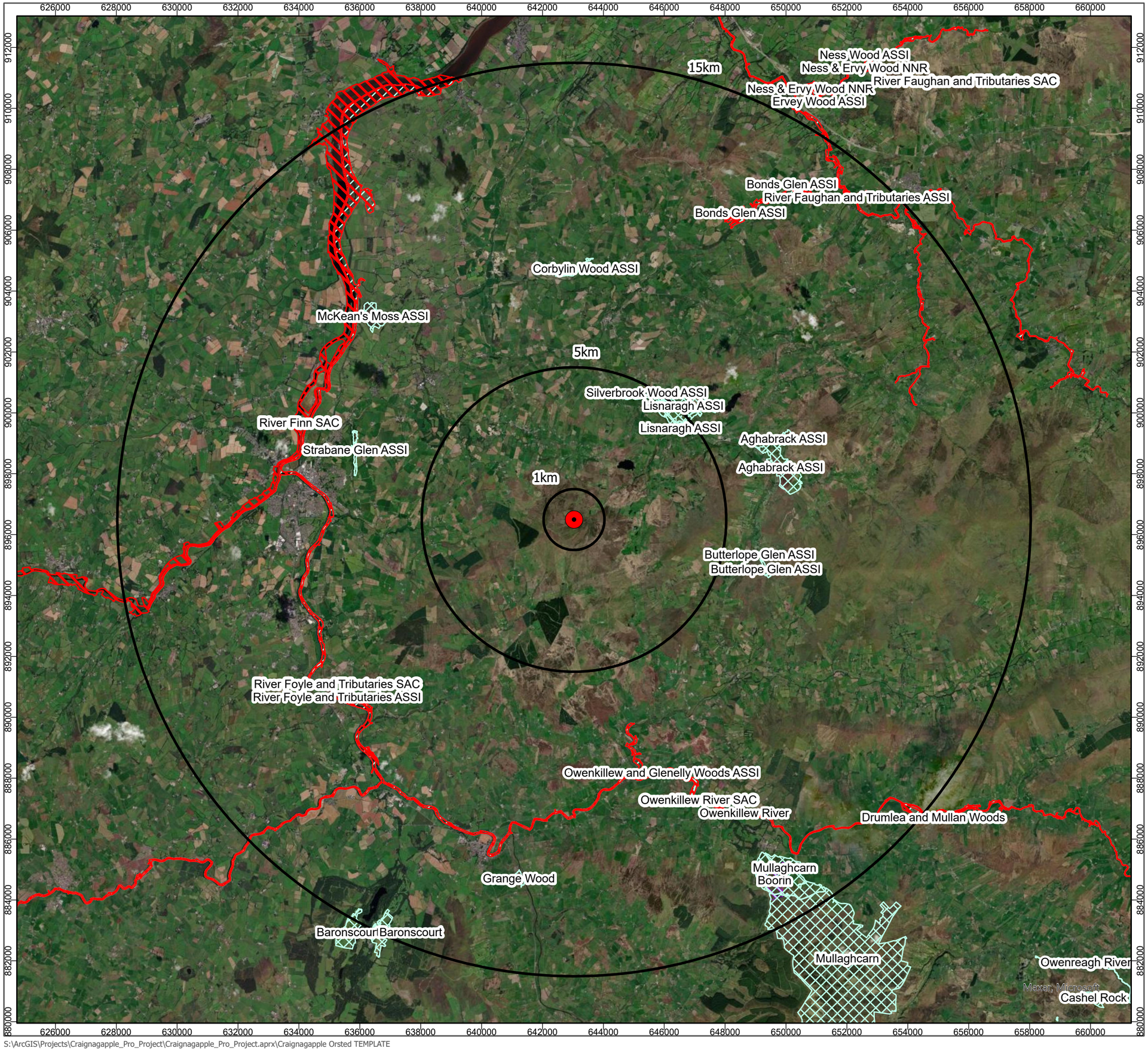

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ARCUS

- Site Location
- Buffers
- SAC
- ASSI
- NNR and NR

Scale @ A3

0 2.5 5 km

NORTH

Produced By: AM	Ref: Pr No.-REP-Dr. No.
Checked By: RN	Date: 25/06/2021

Designated Sites
Figure 7.1

Owenreagh I Repower and Craignagapple Extension Scoping Request

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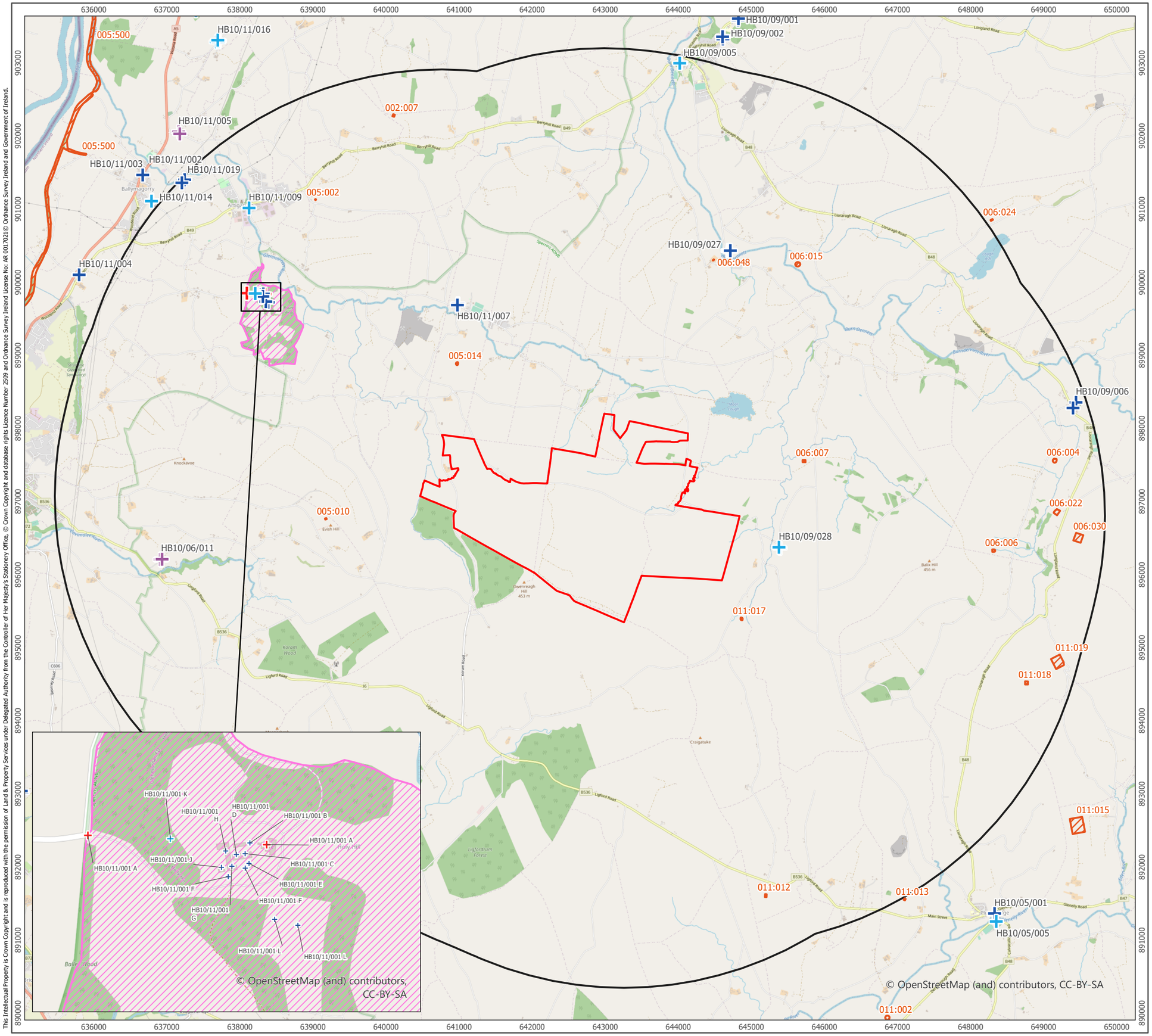


Ørsted

ARCUS

- Site Boundary
- 5 km Study Area
- Holly Hill House Garden
- Scheduled Monument

Listed Buildings

Grade

- A
- B
- B+
- B1
- B2

1:50,000 Scale @ A3

0 1 2 km

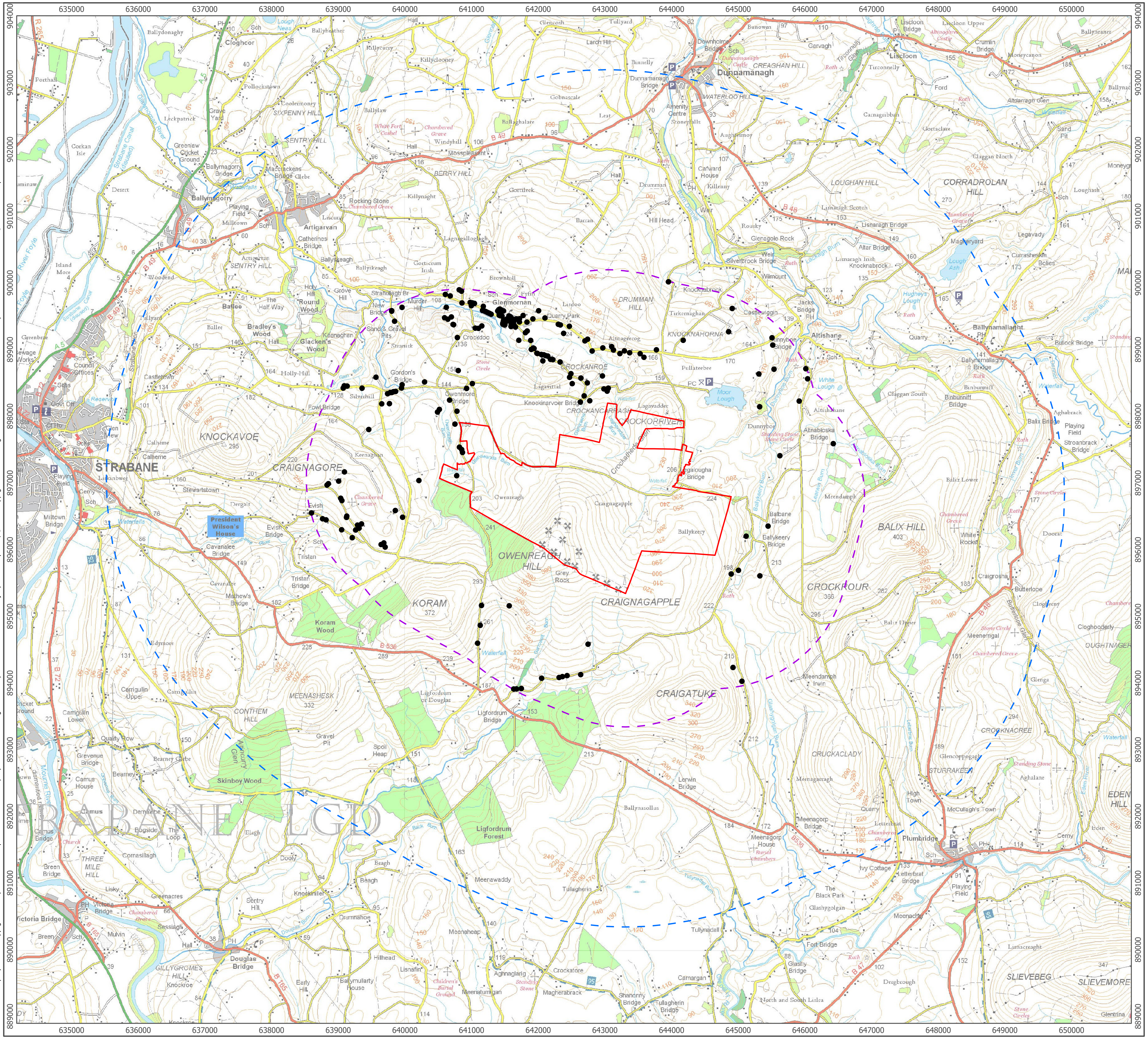
NORTH

Produced By: SC	Ref: 4172-REP-002
Checked By: HK	Date: 11/06/2021

Cultural Heritage Designations
Figure 11.1

Owenreagh I Repower and Craignagapple Extension Scoping Request

P:\GIS\Cultural Heritage\4172 Owenreagh Wind Farm Repowering\4172 Owenreagh Wind Farm Repowering.aprx\4172-REP-002 Fig11.1 Cultural Heritage Designations



Potential Noise Sensitive Receptors

Planning Boundary

2 km buffer

5 km buffer

1:55,000 Scale @ A3

0 1 2 km

NORTH

Produced By: ET	Ref: 4172-REP-001
Checked By: FC	Date: 17/06/2021

Indicative Noise Study Area
Figure 12.1

Owenreagh I Repower and Craignagapple Extension Scoping Request

P:\GIS\Noise\4172 Owenreagh Wind Farm Repowering\4172 Owenreagh Wind Farm Repowering.aprx\4172-REP-001 Fig12.1 Indicative Noise Study Area

The Netherlands
New Zealand
Norway
Panama
Peru
Poland
Portugal
Puerto Rico
Romania
Singapore
South Africa
South Korea
Spain
Sweden
Switzerland
Taiwan
Tanzania
Thailand
UK
US
Vietnam

ERM's Dublin Office
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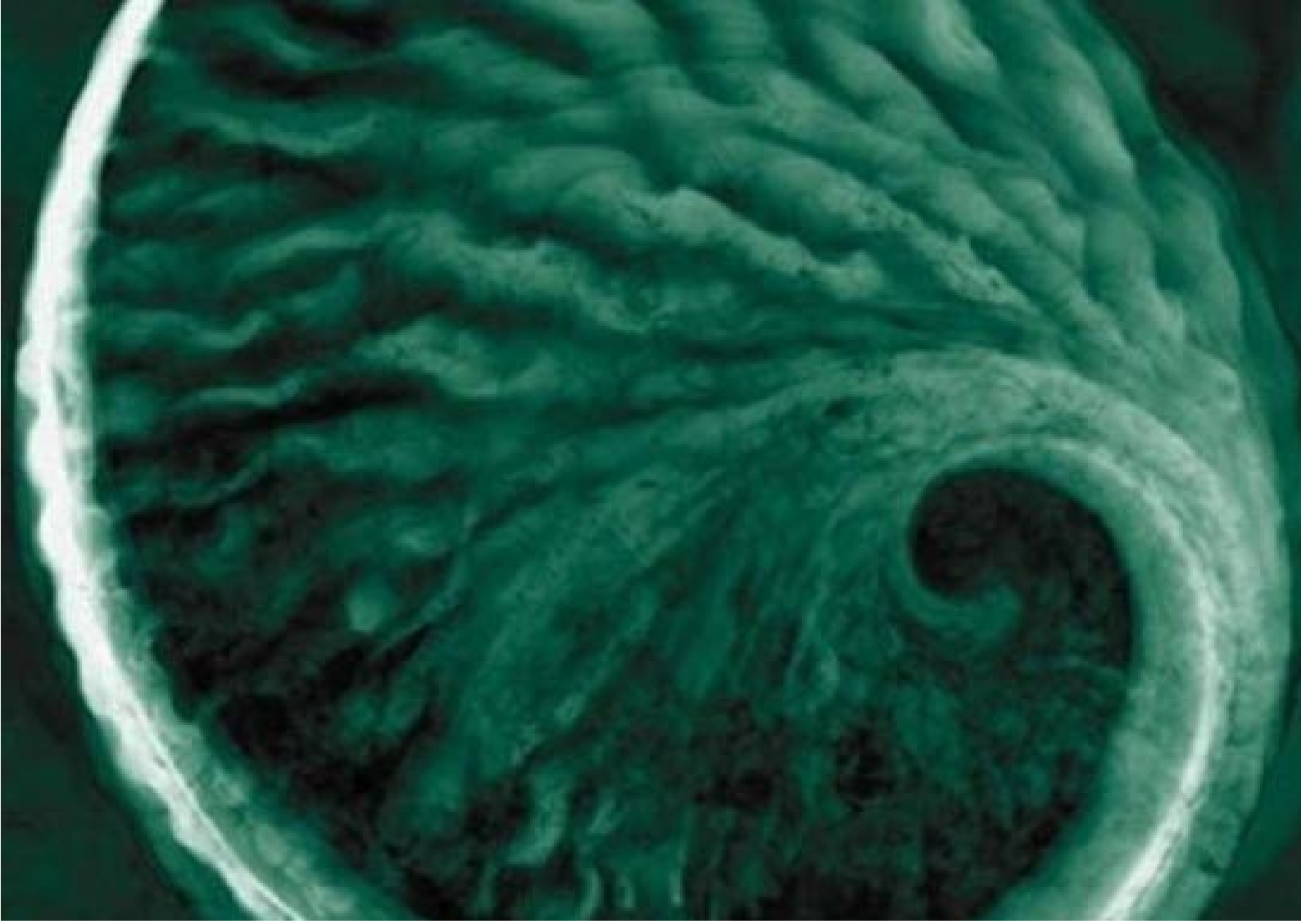

Owenreagh/Craignagapple Wind Farm

Ørsted Onshore Ireland Midco Limited

Environmental Statement- Technical Appendix A2.2 Scoping Opinion

06 September 2023

Project No.: 0696177

Signature Page

06 September 2023

Owenreagh/Craignagapple Wind Farm

Environmental Statement- Technical Appendix A2.2 Scoping Opinion

Magnus Woods
Consultant

Ian Grant
Senior Consultant

Peter Rodgers
Partner

Orlaith Kirk
Senior Planner

Environmental Resources Management Ireland Limited
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Ireland

Department for Infrastructure
An Roinn Bonneagair
Depairtment fur Infrastructure
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Strategic Planning Directorate

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BELFAST
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Tel: 0300 200 7830

Orlaith Kirk
Juno Planning & Environmental Ltd
409 Lisburn Road
Belfast
BT9 7EW

Your reference:
Our reference: LA11/2021/0788/PAD

13 October 2022

Dear Ms Kirk

Proposal: Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Location: Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill, approximately 6 km south east of Artigarvan village, Co. Tyrone.

I refer to the above Pre-Application Discussion and EIA Scoping Request received by the Department on 7 July 2021 and your subsequent agreement to extensions of time for response until 12 October 2022.

You have requested a scoping opinion which under Reg 8(1)(b) is an opinion as to the scope and level of detail of the information to be provided in the environmental statement to be submitted with an EIA application. Under Reg 8(12), the Department has consulted such other authorities likely to be concerned by the proposed development by reason of their specific environmental responsibilities or local or regional competences.

You have already received a number of consultation responses on the above proposal and these are referred to below as providing answers to a number of the questions posed in your scoping report. A number of PAD meetings have also been held with individual consultees and these discussions have also informed the Department's scoping response. Apart from the comments below, the Department is in agreement with the content and methodologies set out in the scoping report.

The Development
Q2.1 The environmental effects of decommissioning should not be scoped out of the assessment. Decommissioning has the potential to impact on the environment in a similar way to construction and should be presented in the Environmental Statement (ES). The ES should assess both the decommissioning of the existing windfarms as well as any future decommissioning of the proposal.

Q2.2 The applicant is entitled to seek an in-perpetuity consent if they so wish. The environmental affects should be assessed on that timeframe and any uncertainties highlighted. However, the Department would not automatically support in-perpetuity consent given the changing nature of the environment and policy context. The Department would prefer that permission is sought for a temporary period as this provides a context for future review of the longer term impact of the development on the environment.

Section 4.3 Structure and Content of the ES
For the purposes of assisting the Department in reaching a reasoned conclusion (as required under the 2017 EIA Regulations) on the significant effects of the proposed development on the environment, the ES should include a summary table of effects and their level of significance, both before and after any proposed mitigation measures.

Policy and Legislative Context
Q5.1 The following comments are made in response to this question.
SFG 6 and SFG 13 of the Regional Development Strategy also have relevance to the proposal.
The reference 'Flood Risk in the SPPS should read Para 6.99- **6.132**.
The Waste Management section in the SPPS is not relevant to the proposal.
Policy AMP 3 has limited relevance as the development is not accessed off a Protected Route.
Policy TEL 2 *Development and Interference with Television Broadcasting Services* has been cancelled and is no longer applicable.

These comments are provided without prejudice to any changes in policy and legislative context at the time of decision.

Q5.2 The following policies are missing from Table 5.2 and should be included in the ES:

- PPS 15 (Revised): Planning and Flood Risk;
- Policy BH1 *The Preservation of Archaeological Remains of Regional Importance* in PPS 6;
- Policy CTY 14 *Rural Character* in PPS 21.

Q5.3 Yes, the Department agrees with para 5.4.1.

Q5.4 The Department has no objection in principle to areas being scoped out provided there is sufficient evidence that there are no likely significant environmental affects and consultees are in full agreement. This should be agreed with the Department in advance of any future submission of an ES.

Landscape and Visual
Feedback on Q6.1-6.8 was provided at the PAD meeting on 16 September 2021. Since that meeting, the height of the turbines has been reduced to approx. 156m, but no further

LVIA information was submitted. Additional comments on this matter were provided by email in May 2022.

Detailed comments on landscape and visual impact will also follow from NIEA when the substantive PAD response is received.

Ornithology
Feedback on Q7.1-7.2 will follow from NIEA. You have also received a copy of the RSPB response which details what they would expect the ES to contain as well as advice on data collection and surveys.

Ecology
Feedback on Q8.1-8.10 has been provided by Shared Environmental Services and advice will follow from NIEA. You have also received a copy of the RSPB response which details what they would expect the ES to contain as well as advice on data collection and surveys.

Without prejudice to NIEA comments, the Department recommends that the applicant ensures that environmental information and surveys are kept up to date.

Geology and Peat
Feedback on Q9.1-9.4 will follow from NIEA. You have also received a copy of the RSPB response which details what they would expect the ES to contain as well as advice on data collection and surveys.

The response from Geological Survey NI states that the Scoping Request document provides a suitable overview of existing knowledge of the sites and an overview of the methods that will be used to determine ground conditions at the turbine and infrastructure locations.

Hydrology and Hydrogeology
Feedback on Q10.1-10.2 will follow from NIEA. The comments of DfI Rivers are also relevant to this topic, in particular the requirement for a Drainage Assessment.

Archaeology and Cultural Heritage
Specific responses to Q11.1-11.4 have been provided by HED (Historic Monuments) and further discussion took place during the PAD meeting on 4 November 2021. Further comments were provided directly to the applicant from HED (Historic Buildings) in February 2022.

Noise
Specific responses to Q12.1-12.4 have been provided by Environmental Health Service of Derry City and Strabane District Council and further discussion took place at the PAD meeting on 5 October 2021. Further discussions were undertaken with EH via email and final comments were provided to the applicant in June 2022.

The Department provided feedback on the residential receptors at our meeting on 15 March 2022 and all discrepancies should be addressed.

Traffic and Transport
Initial responses to Q13.1-13.2 have been provided by DfI Roads and further discussion took place at the PAD meeting on 11 November 2021. The Department is aware that there are ongoing discussions with DfI Roads and would encourage the applicant to continue with these discussions.

Land Use, Socio-Economics and Tourism
Q 14.2 DfI Economics Branch have provided feedback and advice on the socio-economic methodology.
Q 14.3 The developer may wish to consult with the Tourism Manager in Derry City and Strabane District Council.

Other Issues
Q15.1 Belfast International Airport and City of Derry Airport were consulted. It is understood that the applicant is undertaking their own follow up discussions with these airports. The impacts on any private airfields should also be included with the ES.

Q15.2 The Department would not agree that the development's vulnerabilities and resilience to climate change can be scoped out, particularly given the lack of a substantive position from NIEA on peat.

Q15.3 Should no residential properties fall within 10 times the rotor diameter distance of any of the turbines and within 130 degrees either side of north, relative to each of the turbines then the effects of shadow flicker can be scoped out of the assessment. However, this information should be presented in the ES for the final design and layout of the development.

Q15.4 The Department agrees with the suggested approach regarding human health.

Q15.5 The Department would not agree that major accidents and disasters can be scoped out from further assessment, but recognises that these aspects can be covered in other topic chapters such as climate change, geology and peat.

The applicant has been provided with any comments received from telecommunications operators. Any further responses received will be forwarded by email.

In formulating this scoping opinion, the Department has had regard to the information provided by you about the proposed development, the characteristics of the development, the likely significant effects of the development on the environment as set out in Arcus scoping request document dated July 2021, and representations from consultees. As previously advised in discussions and via email, under Schedule 4(6) of the Planning (Environmental Impact Assessment) Regulations (NI) 2017, the Environmental Statement should provide details of the difficulties (for example technical deficiencies or lack of knowledge) encountered when compiling the required information and the main uncertainties involved.

A copy of this scoping opinion has been sent to Derry City and Strabane District Council. You are required under Reg 8(18) to notify the Department in writing whether you wish to proceed with the submission of an environmental statement within 4 weeks of the date of the this scoping opinion. Under Reg 11(3)(c) that environmental statement must be

based on this scoping opinion (so far as the proposed development remains materially the same as the proposed development which was subject to that scoping opinion).

The Department is content to continue with pre-application discussions on the project.

Yours sincerely

NOLA JAMIESON
Principal Planning Officer

Department for
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An Roinn
Bonneagair
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Dfl Rivers Planning Advisory & Modelling Unit

44 Seagoe Industrial Estate
CRAIGAVON
Co. Armagh
BT63 5QE
Tel: 028 3839 9118

Dfl Strategic Planning Division
Clarence Court
10-18 Adelaide Street
Belfast
BT2 8GB

Your Ref: LA11/2021/0788/PAD
Our Ref: IN1-21-11949

Date: 19th October 2021

Dear Sir

Re: Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm - Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone.

With reference to your consultation dated 2nd August 2021. From a drainage and flood risk aspect my comments are as follows:-

FLD1 - Development in Fluvial Flood Plains - The Strategic Flood Map (NI) indicates that portions of the development lie partially within the 1% AEP fluvial flood plain. However, due to the nature of the proposal, DFI Rivers would have no specific reason to object to the proposed development from a fluvial flood risk perspective

Infilling should not take place below the Q100 fluvial flood level, as infilling of the flood plain will only serve to undermine the flood plain's natural function of accommodating and attenuating flood flows. The area of the site affected by flood plain should be kept free from future unauthorised development.

FLD2 - Protection of Flood Defence and Drainage Infrastructure – Numerous undesignated watercourses flow through the site. Under 6.32 of the policy a 5m maintenance strip is required. It should be marked up on a drawing and be protected from impediments (including tree planting, hedges, permanent fencing and sheds), land raising or future unapproved development by way of a planning condition. Clear access and egress should be provided at all times.

FLD3 - Development and Surface Water - Due to the size and nature of the development FLD3 of PPS15 applies. Dfl Rivers would recommend that a Drainage Assessment is carried out for our consideration.

The applicant should refer to paragraph D17 and D18 of PPS 15.

In carrying out the drainage assessment the applicant should acquire from the relevant authority evidence that the proposed storm water run-off from the site can be safely discharged. If the proposal is to discharge into a watercourse then an application should be made to the local Dfl Rivers office for consent to discharge storm water under Schedule 6 of the Drainage (NI) Order 1973.

If it is proposed to discharge storm water into an NI Water system then a Pre-Development Enquiry should be made and if a simple solution cannot be identified then a Network Capacity Check should be carried out. Correspondence with both authorities should be included in the drainage assessment regardless of outcome.

FLD4 - Artificial Modification of watercourses – Under FLD 4 of Planning Policy Statement 15, Artificial modification of a watercourse is normally not permitted unless it is necessary to provide access to a development site or for engineering reasons. This is a matter for the planning authority.

Any culverting approved by Planning Authority will also be subject to approval from Dfl Rivers under Schedule 6 of the Drainage Order 1973. These two approvals are independently necessary.

FLD5 - Development in Proximity to Reservoirs – Not applicable to this site.

You should note, Dfl Rivers has not conducted a site visit to assess this consultation. The Planning Authority is advised that in accordance with Paragraph 5.1 of PPS 15, all liability in respect of flood risk lies with the developers or owners in respect of the application site or other land. The consultation comments in this letter are based only as a result of a desk top study.

Under the terms of Schedule 6 of the Drainage (NI) Order 1973, any proposals either temporary or permanent, in connection with the development which involves interference with any watercourses such as culverting, bridging, diversion, building adjacent to or discharging storm water etc requires the written consent of Dfl Rivers. This should be obtained from the Western Regional Office at 3a St Julians Road, Lisnamallard, Omagh, Co Tyrone, BT79 7HQ.

I trust you find the foregoing helpful and should you require any further information or clarification please contact me at the above address quoting the reference number.

Department for
Infrastructure
An Roinn
Bonneagair
www.infrastructure-ni.gov.uk

Yours faithfully,

Mairead Totten
Planning Advisory & Modelling Unit

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

DfI Roads

Consultation Response

Application Ref: LA11/2021/0788/PAD*

Date of Response 3rd October 2021

In response to consultation dated 1st September 2021 consisting of that information published to the planning portal on 30th July, 2nd August and 4th August 2021, DfI Roads' comments include as follows:

1. The information published to the Portal after 4th August 2021 has not been reviewed for this response. It is for the Planning Authority and Agent to identify, itemise and reconsult us for a response if considered necessary.
2. As a new planning application this response will address the proposed development as a whole as:
   i. Decommissioning of the operational Owenreagh I Wind Farm (Planning Ref. J/1993/0286) and repowering with up to two turbines of up to 180 m tip height and rotor diameter of up to 136 m.
   ii. Amendment and extension of the planning approval for the consented Craignagapple Wind Farm, Planning Ref No. J/2010/0481/F, install a total of 13No turbines.

3. Referring to Section 13 of the Arcus Scoping Request document. If the planning authority accepts the principle of the proposed development on this site the Applicant team is referred to the following for Question 13.1:
   i. 'Transport Assessment - Guidelines for Development Proposals in Northern Ireland' to guide assessment. All travel modes that will access the development are to be examined along with their routes during the most simultaneously onerous of the construction, operational and decommissioning time periods.

      Any reduction in transport provision from policy and guidance should be measured and justified in appropriate detail.

   ii. In addition and specifically for this PAD, the Agent is then referred to 'Guidelines for the Environmental Assessment of Road Traffic'

      The 'Guidelines for the Environmental Assessment of Road Traffic' indicate two triggers to screen and limit the scale and extent of an environmental assessment as stated in 13.2.2 of the Arcus submission.

      It is for the Applicant/Agent to demonstrate that the transport impact of this application will or will not require inclusion in an Environmental Statement.

   iii. As the traffic impacts for as Environmental assessment deal with 'greatest change' rather than 'highest impact', impact thresholds for further assessment of the environmental transport impact will not be the same or the transport assessment of the development itself and shall be agreed with DfI Roads for the development's routes.

   DfI Roads review transport assessments and their scopes for planning applications on a case by case basis.

The Department needs to ensure that a robust methodology/assessment is carried out by the Applicant/Agent team and if undertaking surveys during this time, we need additional information to support these in the form of surveys and count information pre-covid 19.

While hopefully there will be previous planning applications in an area with validated or accepted count information that may be used by the Applicant/Agent team. We, as DfI, will need to satisfy ourselves that the info submitted is considered to a fair and reasonable assessment.

Published factors are available on the DfI Internet page, (see link below). It should be noted that these factors are based on only 20 permanent counting sites across Northern Ireland and can therefore only be used as a general guide. Given the current circumstances it is recommended that the consultants should first look to obtain any 'pre-Covid-19' survey results in the area of the application and apply NRTF growth factors. For each individual Transport Assessment (TA) it will be the responsibility of the Applicant to demonstrate that the traffic figures used are reasonable.

- https://www.infrastructure-ni.gov.uk/publications/traffic-flow-figures
- https://www.infrastructure-ni.gov.uk/publications/traffic-and-travel-information-incorporating-annual-traffic-census-and-variations

As the Agent will be aware traffic data should reflect typical (neutral) flow conditions on the network, (e.g. non-school holiday periods, typical weather conditions etc). Therefore, despite the unprecedented situation we find ourselves in, it would not be deemed appropriate to complete survey work during the summer or any 'holiday' months. Also, the Department does not have factors that could be applied to surveys carried out during the summer months to give robust figures.

It would be prudent for the Agent to also review the site's location with respect to the proposed A5 Western Route Corridor scheme. Current information on this may be viewed at http://www.a5wtc.com/

4. In response to Question 13.2:
    i. It is for the Agent to both define the proposed route and review its geometry, alignment and proposed/published works to consider for access restrictions and limitations. DfI Roads will the provide comment on the submission

    As a proposed development of regional significance, it would be prudent to both agree the scope of the transport assessment (TA) and provide sufficient drawings and information to enable full comments to be provided.
5. For the full application, the Agent is referred to planning guidance contained 'Development Control Advice Note 15 – Vehicular Access Standards' for the access design.

    Any reduction in transport, geometry or parking standard from planning policy and guidance should be measured and justified in appropriate detail.

    The route designs including any improvements required for both abnormal loads and traffic intensification shall be brought forward into the proposed application. It is not for DfI Roads to review other applications on the Agent's behalf.
6. Vehicular provision for servicing including deliveries and maintenance vehicles will require adequate space for manoeuvring and safe traffic management within the site so that vehicles can enter, circulate and the exit the site in forward gear.

7. DfI Roads has no comment on access or internal layout indicated until a suitably scaled and fully dimensioned layout has been provided and consulted via the Planning Authority for the full planning application.
8. Both a legible topographical survey and a fully dimensioned, appropriately scaled layout with proposed levels will be required in the full application submission.
9. The above list is not exhaustive and additional comment will be necessary dependent on the quality and accuracy of the submissions for any future planning application submitted
10. Any meetings with the Agent team should be arranged and chaired by the Planning Authority in order not to undermine the planning authority, planning process and to avoid duplicated communications which, from our experience, both hinder progress and undermines the planning authority.
11. Provided the Planning Authority consents, DfI Roads is content to receive email correspondence from the Agent for this development proposal which initially, if not included, we will forward to the Planning Authority for information. We will then endeavour to provide a response within the Department's correspondence response target of 15 working days to both the Agent and Planning Authority.

Issued on behalf of Development Control Section,
DfI Roads – Western Division

_____ 3rd October 2021
Date

* As a PAD request and Internal Advice submission, this consultation is not subject to the planning portal's 21 calendar day response target

Ryan Lawlor

Economics Branch

Clarence Court

10-18 Adelaide St

BT2 8GB

Consultation response in respect to planning application:

Application Reference	LA11/2021/0788/PAD
Proposal	OWENREAGH I REPOWER AND CRAIGNAGAPPLE MODIFICATION AND EXTENSION
Location	Owenreagh Hill, approximately 6 km south east of Artigarvan village, Co. Tyrone.
Date	September 2021

Economics Branch has been asked to provide a consultation response regarding the above pre-application discussion and environmental impact assessment scoping. The purpose of the PAD and ES scoping exercise is to provide feedback on the emerging proposal and provide advice to the applicant on information which should accompany the full application. The role of the economics branch is to provide feedback and advice regarding the socio-economic methodology.

In the following bullet points I have highlighted some aspects in which additional information can be included within the socioeconomic section:

- Why are the assessments based on studies from 2012 and 2015, are there not updated studies that can be used?

- Please provide the range of values regarding how much energy is produced from the site in terms of total installed capacity and capacity factor (load factor) in order to demonstrate how much energy is to be exported to the grid and how many homes will be supplied in real terms. Please include all calculations, sources and assumptions for these figures. In previous economic statements the total capacity was given which was misleading in terms of how much energy was actually being supplied to homes once the wind farm was in operation.

- Please include Gross Value Added figures for direct and indirect employment including how many jobs and wages will be created in the construction phase and in the medium to long term once operational. Furthermore, how much of the total construction phase spending and jobs will be within will be within NI or other regions.

- Detail the Impact on tax revenues generated, any subsidies provided and potential impact on social security payments.

- Please provide a breakdown of the Labour market conditions, the construction industries performance over recent years, employment rates in each sector (how each sector can benefit) and potential for Job displacement in the local area. Furthermore, some reference of the ability of the local workforce to avail of the opportunities provided by this project (skill levels in the region).

- Impact on consumers in terms of energy costs and the environmental impact in terms of reduced levels of Co2.

- Impacts to homeowners within the area in terms of potential impact on house prices.

- Please include an assessment of the carbon footprint of the wind turbines regarding manufacturing, supply, installation and decommissioning. Including figures on when we can expect the wind farm to become carbon neutral once it is in operation.

Ryan Lawlor
Departmental Economist

FOREST SERVICE

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www.daera-ni.gov.uk/forestry

DFI Strategic Planning Division
Clarence Court
10 – 18 Adelaide Street
Belfast
BT28GB

Ref LA11/2021/0788/PAD

26 October 2021

Dear Sir/ Madam

Forest Service response to a scoping request : Owenreagh 1 Repower and Modification and Extension to Craignagapple Wind Farm

I refer to your pre-application request seeking comments on the submitted scoping report and an opinion as to the information to be provided in the Environmental Statement to be submitted with an EIA application.

Appraisal of the proposal: Forest Service Interest

The land which is the subject of this application shares a boundary along approximately 2000 metres of land which is in the freehold ownership of DAERA Forest Service. This area forms part of Ligfordrum Forest. The area closest to the wind farm boundary was planted mainly with Sitka spruce in 1986 and some parts may not be harvested for at least a further 25 years.

The maximum turbine height is stated as 180m. It should be noted that the location of Turbine 2 (T2) lies within 180m of the Forest Service boundary and is therefore within falling distance of land to which there is a statutory right of public access. Therefore, Forest Service requests that the location of any turbine should be at a sufficient distance

from the site boundary that in the eventuality of it toppling, it will fall within the boundary of the wind farm itself.

A mixed woodland supported by a forestry grant is located at D 43644 96757 and lies within the site boundary. It is 0.4ha in size and was planted in 1997.

It is noted that this proposal does not involve woodland removal or tree felling. Should this change, the proposed method of forestry felling should be detailed and the environmental impacts associated with this felling should be considered in accordance with the Irish Wind Energy Industry Best Practice Guidelines (2012)[1].

Informatives

Our policy on proposals for woodland removal in the course of planned development is to:

- Seek to avoid removal of woodland within the planning application area other than the area required for construction and ancillary works unless there are overriding environmental considerations such as the opportunity to restore priority habitats[2].
- Seek woodland regeneration where clear-felling (as opposed to woodland removal) is permitted within the planning application area in keeping with good forestry practice[3].
- Ensure that the views of the local community are represented in any decision.

[1] https://windenergyireland.com/policy/best-practice-guidelines

[2] "Priority habitat restoration" – is defined as the conversion of forest plantation to those habitats which require conservation action because of their decline, rarity and importance. It includes restoration of open priority habitat such as blanket bog.

[3] "Good forestry practice" – is defined as the sustainable forest management requirements identified in The UK Forestry Standard.

FOREST SERVICE

Under Section 1 of the Forestry Act (Northern Ireland) 2010[4], the Forest Service has the general duty of promoting afforestation and sustainable forestry. Sustainable forest management standards are described in The UK Forestry Standard, 4th edition (Forestry Commission 2017)[5] and set out the UK governments' approach to sustainable forest management.

In accordance with its deforestation policy, Forest Service requires developers to seek to avoid removal of woodland within the planning application area other than the area required for construction and ancillary works, unless there are overriding environmental considerations such as the opportunity to restore priority habitats[6].

If you require clarification on any aspect of this letter, please contact me at the above address.

Yours sincerely,

John Griffin

Policy & Regulation Branch

[4] http://www.legislation.gov.uk/nia/2010/10/contents
[5] https://www.forestry.gov.uk/ukfs
[6] "Priority habitat restoration" – is defined as the conversion of forest plantation to those habitats which require conservation action because of their decline, rarity and importance. It includes restoration of open priority habitat such as blanket bog.

Department for Communities
www.communities-ni.gov.uk

Historic Environment Division
Ground Floor, 9 Lanyon Place
Town Parks
Belfast
BT1 3LP

Tel: 028 9082 3100
Email:
HEDPlanning.General@communities-ni.gov.uk

Date:26 September 2021

Dear Sir/Madam

Planning Application Ref.:	LA11/2021/0788/PAD
Location:	Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone.
Proposal:	Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Thank you for your consultation on the above application, received by DfC on 06/09/2021

Historic Environment Division (HED) has reviewed the details of the application and provides summary comments as follows:

Archaeology and Built Heritage
HED (Historic Monuments) has considered the scoping reports submitted with this application and broadly agree with the methodology presented within it for the development of the Cultural Heritage section within the Environmental Impact Assessment.

Should you seek further clarification on any of the issues raised in this response, please do not hesitate to contact the HED Planning Team.

Kind Regards

Historic Environment Division

Issued on behalf of Department for Communities

Archaeology & Built Heritage

Section Reference SM11/1 TYR 11: 17

Consideration

This application site is located in an upland area with a number of archaeological monuments nearby, many of which date from the prehistoric period and include statutorily protected scheduled monument and monuments in state care. Historic Environment Division (Historic Monuments) would have concerns regarding the impact of the proposed windfarm on the setting of these monuments and also on the physical remains of previously unrecorded sites or monuments within the application site.

HED (Historic Monuments) has considered the scoping reports submitted with this application and broadly agree with the methodology presented within it for the development of the Cultural Heritage section within the Environmental Impact Assessment. Find below HED (Historic Monuments) response to the Key Questions asked in section 11.6:

1. Q11.1 HED (Historic Monuments) broadly agrees with the scope of the assessment presented within this report. However, the applicant should consider the results of the ZVT to widen the list of viewpoints selected for assessment. This should include Scheduled and State Care monuments further out than 5km from the site as the proposed turbines are much taller than the existing turbines and may have an impact on the setting or views from monument further away. The applicant should also consider the impact on the non-statutorily protected monuments much closer to the application site as these will not have been previously considered. The mitigation methodology should also include mitigation for cabling trenches.
2. Q11.2 the HERoNI records and the HED web mapping is reasonably up-to-date and should include all information on excavations and recent archaeological discoveries in the area.
3. Q11.3 please refer to response to Q11.1. the applicant should consider the impact of the proposed on any statutorily protected monuments that are shown to have a clear visibility of the windfarms in the ZTV even if they are further than 5km away,
4. Q11.4 again please refer to response to Q11.1 and Q11.3.

We refer the applicant to the HED document *Guidance on Setting and the Historic Environment* which contains advice on the assessment of the settings of heritage assets and the potential impacts of development proposals upon them. HED (Historic Monuments) welcomes early discussion on this application.

Informative

- Please refer to the HED guidance document Development and Archaeology: Guidance on Archaeological Works in the Planning Process.

- The applicant's attention is drawn to the HED document *Guidance on Setting and the Historic Environment*, which provides advice on the analysis of the settings of heritage assets in Northern Ireland, and how the potential effects of development proposals may be assessed.

Loughs Agency
Gníomhaireacht na Lochanna
Factrie fur Loughs

Dfl Strategic Planning Division
Clarence Court
10-18 Adelaide Street
Belfast
BT2 8GB

06 January 2022

Dear Sir/Madam

Planning Application: ***LA11/2021/0788/PAD - Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm at Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone.***

Thank you for your correspondence dated 02 August 2021 in relation to the above-mentioned proposed development. The Loughs Agency is the statutory body charged with the conservation, protection and development of inland fisheries within the Foyle and Carlingford systems, the promotion of development of Loughs Foyle and Carlingford, and catchments for commercial and recreational purposes in respect of marine, fisheries and aquaculture issues and the development of marine tourism.

At the pre-application stage of a development there is limited information available, therefore Loughs Agency can only provide general advice on potential impacts a proposal may have on fisheries interests. Loughs

Agency would like to note the potential impacts of windfarms on fisheries interests, water quality and the aquatic environment:

- Obstruction to fish migration during and post construction
- Disturbance to spawning beds (redds) during construction
- Increased silt and sediments from construction works, potential for sediment laden discharge or run-off from the site including the potential for highly toxic cement and wet concrete to enter the water environment
- Point source pollution incidents during construction
- Peat slippage adjacent to watercourses can smoother spawning beds if peat becomes entrained in the river bed gravel and can damage aquatic habitat in the entire downstream receiving water environment
- Drainage issues, including increased flow and loss of headwaters (Loughs Agency note the proposed turbine locations in close proximity to headwater of the Glenmornan River).

It is noted by our colleagues in SES the project appears to be hydrological connected to the River Foyle and Tributaries SAC. The Atlantic salmon which are a key feature of the designated river are internationally in decline, and as such any development particularly adjacent to or hydrologically connected to the river must ensure the conservation of this species is considered. The Foyle is also part of a key corridor for upward migrating Atlantic salmon and downward migrating juvenile smolts. This corridor is also a key pathway for European Eel and other noteworthy species. The Aquatic and Fisheries Assessment should take account of data held by the Loughs Agency.

Fish need unpolluted water and abundant food in a habitat that provides spawning areas, shelter and freedom of movement. The bed and soil of a natural river and the associated aquatic and riparian vegetation combine to provide the food chain on which fish depend. A natural river channel is characterised by the morphological features that are vital for the life cycle of fish: gravel shoals or reed beds for spawning, pools and riffles where fish feed and rest, and turbulent reaches which enhance oxygenation. Loughs Agency has been involved in investigating recent peat slippages, and notes one of the potential impacts of peat entering the downstream hydrological environment is disturbance to spawning beds including silt and sediment entering the interspatial areas in spawning gravels. There is also concern in relation to the subsequent impact on the hydrological environment, peat bogs absorb and retain large volumes of water flow, the removal of such may increase the velocity of surface water runoff in times of flood and affect resident fish species.

The cutting and drainage associated with the development of wind turbine infrastructure can have negative effects on the rainwater attenuation properties of peat. As well as an increased flood risk in local streams and rivers, development involves a risk of large-scale bog movement, resulting in landslide or bog burst. The downstream hydrological environment supports important fish spawning areas and would have a high sensitivity to pollutants and changes in water chemistry. Environmental impact can occur during construction, operation and/or decommissioning of wind turbines.

The following factors should be considered in evaluating the potential impacts of the development to fish populations and fisheries:

- The presence and abundance of Salmon, trout, sea lamprey, river lamprey, brook lamprey and European eel.
- Timing of construction works - Many species of migrating fish are particularly vulnerable during certain seasons. Salmonid spawning and incubation occurs from October to May, and as a general rule, in-stream works are not permitted during this time. Careful maintenance of silt traps and drainage measures should be undertaken all year round but particularly during the spawning season. Other species such as lamprey are most sensitive from March to June and may also require careful consideration. The Loughs Agency must be consulted directly on these matters.
- Loughs Agency would request sight of any proposed culverts within the proposed wind farm site. This would include all proposed pipe and box culverts for road/track crossings and any works on site drainage. Loughs Agency would like to take this opportunity to remind the application it is an offence to remove or disturb any material, including sand or gravel from the bed of any freshwater river within the Foyle and Carlingford Areas without the consent of the Loughs Agency contrary to Section 46 of the Foyle Fisheries Act (NI) 1952, as amended by Article 18(3) of the Foyle and Carlingford Fisheries (NI) Order 2007. A Section 46 application can be made on our website: https://www.loughs-agency.org/managing-our-loughs/conservation/river-permits/permits/ Any instream works should refer to Loughs Agency published guidance; Guidelines for Fisheries Protection during Development Works (Foyle and Carlingford areas).
- If silt traps and settlement ponds are utilised, they must be capable of

settling out materials prior to discharge off site. The traps and ponds must be regularly inspected and maintained accordingly to prevent pollution of surface waters which is detrimental to fisheries.

- Loughs Agency request that work methods and materials must not impinge upon any nearby watercourses. The use of cement/concrete on site will require careful management. While they are versatile building materials, they are also highly toxic to aquatic life and therefore must be kept out of all drains and watercourses.
- Adequate containment should be provided for all chemical, fuel and oil storage on the site. The refuelling of vehicles should occur an in designated areas such as the temporary compound area, away from watercourses.
- The potential impact on fisheries from the decommissioning of the operational Owenreagh I Wind Farm and site restoration, and with decommissioning of the new development which is subject of the application, should be considered.
- The applicant should demonstrate best environmental practice when working close to watercourses, as per environmental guidance in GPP 5: Works and maintenance in or near water and PPG 6: Working at construction and demolition sites. The potential for deleterious matter to enter a watercourse is of primary concern. Impacts on the aquatic environment such as a decrease in water quality can cause a significant impact upon various life history stages of fish species.

The applicant should also be aware that it is an offence under section 41 of the Foyle Fisheries Act (1952) to cause pollution which is detrimental to

fisheries interests.

Environmental Officer

On behalf of the Loughs Agency

Northern Ireland Electricity Networks Ltd
Fortwilliam House
Edgewater Office Park
Edgewater Road
Belfast BT3 9JQ

Tel 028 9066 1100
Website: www.nienetworks.co.uk

Date: 18 October 2021
Your Ref: LA11/2021/0788/PAD

Dear Sir/Madam

Re: Planning Application -LA11/2021/0788/PAD

Location – Existing operational Owenreagh Wind Farm (I & II) located to the easter edge of the Sperrin Mountains on Owenreagh Hill, approximately 6km south east of Artigarvan village, Co.Tyrone.

Proposal – Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm)

We refer your letter of 12 October 2021 seeking the comments of Northern Ireland Electricity Networks Limited ('NIE Networks') on the above mentioned planning application.

NIE Networks has no objection to make to the planning application.

The proposed development should take into account the position of any NIE Networks' equipment in the area to ensure safety. The developer should maintain statutory clearance from NIE Networks' equipment during the construction and operational phases of the project and also during future maintenance programmes in accordance with HSE Guidance Note GS6 (Avoidance of Danger from Overhead Electric Lines) and HSE Booklet HS(G)47 (Avoiding Danger from Underground Services). Further information is also available at http://www.nienetworks.co.uk/Safety-Environment.

The developer should consider, in their design, the risk of any turbines interfering with NIE Networks' equipment. Any infringement of the clearances to NIE Networks' equipment may require overhead line diversions or placing the circuits underground.

In addition, the development must also take into account the scope for interference with NIE Networks' radio telecommunication equipment.

Should information be required at this stage regarding the location of NIE Networks' equipment adjacent to the development, please contact NIE Networks with the location details of your proposed development at:

- Northern Ireland Electricity Networks Ltd, Distribution Service Centre, Request for Markup, Carn Industrial Estate, Craigavon, BT63 5QJ.
- markups@nienetworks.co.uk
- 03457 643643

NIE Networks' current policy for connection to the network is by means of overhead lines and underground cables and may require the construction of a substation to connect the proposed generator to the network. The specifications of the substation will be determined following application for connection.

We hope that this information will be of assistance to you.

If you require any further clarification or additional information then please do not hesitate to contact us.

Customer Helpline Number: 03457 643 643
Email: RenewablePlanningConsultations@nienetworks.co.uk

Yours faithfully,

Valencia Weir
Network Development
NIE Networks

Westica Communications Ltd
(on behalf of PSNI Information & Communications Services)
5 Dalziel Road
Hillington Park
GLASGOW

04 November 2021

Reference: Planning Application LA11/2021/0788/PAD

The proposed development has been assessed from a technical safeguarding aspect in respect of any potential impact on the NI Emergency Services Radio Communications and Public Safety Telecommunications Infrastructure. This assessment is based on our safeguarding criteria and in accordance with the information; shown in the table below, and as contained in the Planning Application referenced above.

Accordingly, Westica Communications has not any technical safeguarding objection to this proposal. This assessment applies specifically to this consultation and the exact parameters shown below.

If there are changes to the information, on which this assessment is based, then we would request that it be further consulted, prior to planning permission being

Turbine Number	Overall Height (m)	Hub Height (m)	Blade Length (m)	Tower Diameter (m)	Microsite Radius (m)	Co-Ordinates		Assessment Status
						Easting	Northing	
T1	180	112	68	4	0	243739	396397	Unlikely to have an Impact
T2	180	112	68	4	0	241358	396577	Unlikely to have an Impact

T3	180	112	68	4	0	242985	396707	Unlikely to have an Impact
T4	180	112	68	4	0	243413	396584	Unlikely to have an Impact
T5	180	112	68	4	0	242971	396061	Unlikely to have an Impact
T6	180	112	68	4	0	541738	397086	Unlikely to have an Impact
T7	180	112	68	4	0	242150	396921	Unlikely to have an Impact
T8	180	112	68	4	0	242592	396843	Unlikely to have an Impact
T9	180	112	68	4	0	241799	396523	Unlikely to have an Impact
T10	180	112	68	4	0	242623	396261	Unlikely to have an Impact
T11	180	112	68	4	0	243739	396397	Unlikely to have an Impact
T12	180	112	68	4	0	243482	397145	Unlikely to have an Impact

Westica Communications Limited.
5 Dalziel Road
Hillington Park
Glasgow
G52 4NN
Registered in Scotland Number SC276144. Te: 0141 889 6548. FAX: 0141 849 7345. WEB: www.westica.com

Shared Environmental Service
Silverwood Business Park
190 Raceview Road
Ballymena
Co. Antrim
BT42 4HZ

29/12/2021

Planning Reference: LA11/2021/0788/PAD

Location: Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountain

Proposal: Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm- Submission of 'EIA Scoping Request' and 'Pre-Application Discussion' report

Consultation Type: Pre-Application Discussion (PAD) Advice and EIA Regulation 8(1) Scoping Request

Advice for planner: At the pre-application stage of a development there is limited information available, therefore Shared Environmental Service (SES) can only provide general advice on potential impacts a proposal may have on European Designated Sites and identify the information required to assess these impacts.

It is noted that NIEA and the Loughs Agency were consulted on 2/8/21 and have not responded to date. Any comments by those bodies relevant to the HRA should be taken into account in addition to the comments below.

The proposed site is within the catchment of and appears to be hydrologically connected to both River Foyle and Tributaries SAC and River Faughan and Tributaries SAC. It should be noted that salmon and otter as selection features of these sites may be present upstream of the SACs. The Aquatic and Fisheries Assessment should take account of data held by the Loughs Agency and identify suitable habitat for these species downstream and within the range of influence of the development. Potentially the application site and related infrastructure will be on a flight path for migrating SPA selection features, for example to/from Lough Neagh and Lough Beg SPA and Ramsar site.

A Habitats Regulation Assessment (HRA) will be required to assess potential impacts on the above European Sites and features. SES requests that a shadow Habitats Regulations Assessment (sHRA) is undertaken by the applicant in consultation with the Northern Ireland Environment Agency (NIEA) which is best placed to provide the necessary information to inform the sHRA. The sHRA should be included as a stand-alone document or Annex to the Environmental Statement and include findings and, if necessary, mitigation specific to the sites and features identified above.

The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 Regulation 23 requires coordination between the EIA and the Habitats Regulations Assessment required under Regulation 43 of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). The Environmental Statement should therefore be consistent with the information in and findings of the sHRA and, in particular, any mitigation found necessary for the HRA should be cross referenced in the Environmental Statement and related documents such as a Schedule of Environmental Commitments.

The decommissioning of the operational Owenreagh I Wind Farm and site restoration, together with decommissioning of the new development which is subject of the application, should be included in the Stage 1 test of likely significance and, where likely significant effects cannot be excluded, Stage 2 appropriate assessment. The sHRA should also assess any related works offsite, for example any

infrastructure to connect to the national grid, and potential in-combination impacts on the above sites and features.

ses@midandeastantrim.gov.uk

13th October 2021

Dear Sir/Madam

Ref: LA11/2021/0788/PAD

Vodafone on behalf of NIE Networks and SONI have no objections to the proposed development:-

Location:

Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill, approximately 6 km south east of Artigarvan village, Co. Tyrone.

Proposal:

Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Yours faithfully,

Robert Morris

Robert Morris
Senior Engineer
Vodafone Limited

From:	Raymond Ferguson
To:	Thompson, Nicole
Subject:	LA11/2021/0788/PAD
Date:	08 September 2021 15:10:40

LA11/2021/0788/PAD
Location: Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill, approximately 6 km south east of Artigarvan village, Co. Tyrone.,

Proposal: Repowering of the operational Owenreagh I Windfarm & Modification and

Extension of the Permitted Craignagapple Windfarm

Nicole

Further to our discussion I wish to inform you on Behalf of Adelphi Net1 that we have no objections to the above proposal.

Regards
Raymond Ferguson
Area Manager
Adelphi Net1 Ltd

Your Ref: LA11/2021/0788/PA
D
Our Ref: BIA21-5837
File Ref: EPIC

16 August 2021

Engineering Department

DfI Strategic Planning Division
Clarence Court
10-18 Adelaide Street
Belfast BT2 8GB

For the attention of:

Dear Sir/ Madam

Proposed (Pre Planning) Development of: **Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm: Existing operational Owenreagh Wind Farm, 6 km south east of Artigarvan village**

I refer to your letter dated 02/08/2021 received by the Belfast International Airport on 02/08/2021.

The Town and Country Planning (Aerodromes and Technical Sites) Direction 2/92 requires that local planning authorities provide certain information when consulting Belfast International Airport for safeguarding advice. Your consultation did not contain that information; it was therefore incomplete and we are unable to comment at this stage. We have however established that this development lies within our safeguarded area and a full consultation with this airport needs to be carried out.

Please note that, should the above information become available and the consultation be resubmitted to Belfast International Airport, it should include all the relevant data listed under the Direction.

As the required information has not been provided, the consultation is not in compliance with the Direction, therefore Belfast International Airport has not been consulted in accordance with the Direction. In accordance with the terms of the

Belfast International Airport Ltd
Belfast Co Antrim Northern Ireland BT29 4AB

Tel: 028 9448 4511 Fax: 028 9442 3883

Circular we look forward to being consulted prior to the grant of planning permission once the information necessary to the assessment process becomes available.

For your convenience the Direction requires local authorities to provide the following:

(1) a copy of the application together with copies of any submitted plans showing
(2) the exact location of the proposal with a Grid Reference (to at least 6 figures),
(3) an elevation of the proposed development (to an accuracy of 0.25m above Ordnance Datum)
(4) a layout, dimensions and heights of buildings or works to which this application relates.
(5) a P1W form

With this information the airport can assess if the proposed development would infringe any of the protected airspaces (known as obstacle limitation surfaces) required for the safe operation of aircraft.

We can however say we have checked the location of this proposed application and it lies outside our safeguarded area. If all the relevant information was to come in today via the Planning Portal BIA would be replying with No Objections to this application.

Yours faithfully

Joe McGuigan
Projects and Safeguarding Supervisor

Belfast International Airport Ltd
Belfast Co Antrim Northern Ireland BT29 4AB

Tel: 028 9448 4511 Fax: 028 9442 3883

NI Planning Ref: LA11/2021/0788/PAD 15/08/2021

Our Ref. WID11609

Dear Sir/Madam

Thank you for your email dated 04/08/2021

We have studied this proposal with respect to EMC and related problems to BT point-to-point microwave radio links.

The conclusion is that, the Project indicated should not cause interference to BT's current and presently planned radio network.

Please direct all queries to **radionetworkprotection@bt.com**

Regards

Lisa Smith
Engineering Services – Radio Planner
Networks

Defence Infrastructure Organisation

Land Management Services & Disposals NI
LISBURN
BT28 3NP

Telephone [MOD]: 028 9226 2941
Marie.nicholson587@mod.gov.uk

Department of the Environment
Strategic Planning Division
Millennium House
2nd Floor
17-25 Great Victoria Street
Belfast BT2 7BN

9 September 2021

Application Ref:
LA11/2021/0788/PAD

Dear Sir

Planning Application Consultation Return

With reference to the above, DIO do not object to this planning application.

Comments

Yours faithfully

Area Tyrone

Derry City & Strabane District Council
Comhairle Chathair Dhoire & Cheantar an tSratha Báin
Derry Cittie & Stràbane Destrick Cooncil

PLANNING PRE-APPLICATION CONSULTATION COMMENTS

Planning Application Ref No.: LA11/2021/0788/PAD **Date Received:** 02-08-2021

Proposal: Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Location: Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone.

ENVIRONMENTAL HEALTH COMMENTS

A pre-application request has duly been received seeking under Regulation 8(1)(b) of the Planning (Environmental Impact Assessment) Regulations (NI) 2017, an opinion as to the scope and level of detail of the information to be provided in the Environmental Statement to be submitted with an EIA application.

The proposal relates to the 'Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm'. This means removing the remaining 9 Owenreagh I 40m hub height Zond Z40 turbines permitted under J/1993/0286/F and replacing with two larger turbines and also modifying the approved J/2010/0481/F Craignagapple wind farm scheme to increase the permitted number of turbines from six to thirteen and to permit a model of turbine. It is understood that the 6 x 44m hub height VESTAS V52 turbines associated with the Owenreagh II development (J/2004/1015/F) are to remain operational in their current position. There will also be changes to the wind farm layout (e.g. traffic routes, substation etc.).

Environmental Health have been asked to provide comments on the submitted Scoping Report and an opinion as to the information to be provided in the Environmental Statement to be submitted with an EIA application. Specifically, Environmental Health have been asked to provide answers to the key questions for consultees which are contained within the scoping report as well as the conclusions presented on scoped in and scoped out effects. The questions relevant to the remit of Environmental Health are those contained within Chapter 12 of the Scoping Report entitled 'Noise'. Please find the answers to those questions below.

Key Questions for Consultees

Q12.1: Are consultees content with the proposed methodology and scope of assessment?

Derry City and Strabane District Council (DCSDC) are generally content with the methodology and scope of the assessment. DCSDC would highlight that the best practice included within the 'Supplementary Guidance Notes' to the IOA document '*A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'* should also be followed where relevant. The applicant should initially demonstrate that the development can meet the lower daytime noise limit of 35dB/Background+5Db and also demonstrate that any proposed increase to a higher daytime limit between 35 and 40dB(a) can be justified by providing detailed information on:

- The number of dwellings in the neighbourhood of the wind farm
- The effect of the differing noise limits on the number of KWh's generated
- The duration and level of exposure of noise at any noise sensitive receptors where the predicted level of noise is expected to be greater than the lower daytime noise limit of 35dB/Background+5Db

Derry City and Strabane District Council shall expect to see all the raw data meteorological and acoustic data from which wind speed referenced background noise levels have been derived. The developer will be expected to provide all manufacturers sound power level and uncertainty data for the candidate turbine or suite of candidate turbines on which noise predictions have been based. The applicant will also be expected to provide a copy of the calculation spreadsheets used to predict/determine receptor noise levels. It is also noted that there are a number of residential properties located in a valley east of the development. An appropriate 'valley correction' should be applied to the noise predictions at these properties if appropriate.

Q12.2: Do the Council and consultees agree that the previous baseline noise levels measured as part of the assessment for the consented Craignagapple Wind Farm remain valid and appropriate for use as part of the assessment of the Development?

The applicant for the Craignagapple Wind Farm application (J/2010/0481/F) collected a number of background noise measurements at locations in the vicinity of the proposed development. Originally background noise measurements were taken at noise monitoring locations MPZA, MPZB, MPZC, MPZD, MPZE. A further two background noise monitoring exercises were completed sometime later at locations H18 and H42. It is now understood that much larger turbines are to be installed at the site and that there will a significant difference between the hub heights of the turbines previously approved on the Craignagapple application (J/2010/0481/F) and those now proposed for '*The repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm*'. The historical background noise measurements were referenced to standardised 10m wind speeds which were derived from hub height wind speed measurements for the J/2010/0481/F turbines. The new turbine hub height will be higher therefore the reference wind speeds at which the previous background noise levels were quoted are now incorrect. These background noise levels cannot therefore be correlated against noise predictions based on the turbine manufacturers sound powers levels standardised to 10m height

It is also noted that there is significant forestry land surrounding the development. The removal of large swathes of forest can have an impact on measured background noise levels, particularly in relation to noise sensitive receptors located in close proximity to such lands. The developer should carry out a review of all noise sensitive receptors and their proximity to forestry land and include a section within any future noise assessment which describes the potential implications for those background noise levels and derived ETSU-R-97 noise limits due to the removal of forestry trees.

Q12.3: Do the Council and consultees have details of any further cumulative developments in the locality which it considers may raise significant issues within the EIA process for the Development?

Environmental Health is not aware of any further cumulative development which may raise significant issues within the EIA process. It is the applicant's duty to ensure all relevant cumulative wind energy development is included within the noise impact assessment. The applicant must also ensure that the noise sensitive receptor database has been updated to include any new approved committed or existing residential development in the vicinity of the development site.

Q12.4: Are consultees content to scope out Low Frequency Noise and Infrasound, Amplitude Modulation, Ground Borne Vibration, a detailed assessment of Construction and Decommissioning noise, and noise from the substation?

Environmental Health are content to scope out Low Frequency Noise, Infrasound, Amplitude Modulation and ground borne vibration from the initial noise assessment. All relevant penalties associated with any reported noise characteristics reported by turbine manufacturers should be applied as appropriate. The IOA document 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' states that the evidence in relation to "Excess" or "Other" Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM. The GPG was issued in 2013. The applicant should be aware that Derry City and Strabane District Council will be attaching a planning condition to address potential amplitude modulation should the outline development proposal obtain approval. Environmental Health would however like an assessment to be made of noise from Construction and Decommissioning noise, and noise from the substation.

Upcoming PAD Meetings

The Environmental Health Service of Derry and Strabane District Council are happy to attend any upcoming pre-application discussion meetings.

Department for Business, Energy and Industrial Strategy review of onshore wind farm noise assessment guidance: Stakeholder Engagement Survey

The developer should also be aware that The UK Government Department for Business, Energy and Industrial Strategy is now undertaking a scoping review of current UK onshore wind turbine noise assessment guidance. The purpose of the review is to determine whether the guidance adequately ensures that wind turbine noise is managed effectively and consistently in line with current Government policies on noise. DCSDC will maintain a watching brief on any recommendations and additional guidance resulting from this exercise.

Issued on behalf of the Environmental Health Service

Date: 26th August 2019

NOTE: Any consultation response provided by the Environmental Health Service is based on: information supplied by the applicant, and other information currently available.

Department for the Economy
www.economy-ni.gov.uk

GSNI Geological Survey of Northern Ireland
www.bgs.ac.uk/gsni

Dundonald House
Upper Newtownards Road
Belfast
BT4 3SB

gsni@economy-ni.gov.uk

GSNI Ref : E2581
Client Ref: LA11/2021/0788/PAD
Date of Consultation: 02/08/2021

Client Contact: Department for Infrastructure

Proposed Development: Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Location: Owenreagh Hill, c. 6 km south east of Artigarvan village, Co. Tyrone

Consultation Type: Planning

Comments:

The Scoping Request document written by Arcus Consultancy Services Ltd. provides a suitable overview of existing knowledge of the sites and an overview of the methods that will be used to determine ground conditions at proposed turbine and infrastructure locations. The proposed Peat Slide Risk Assessment will form the backbone of GSNI's decision making process when the Environmental Statement is submitted.

Best regards,

Planning Team
Geological Survey of Northern Ireland

Date: 12/08/2021

NATS Safeguarding Office
4000 Parkway
Whiteley
Fareham PO15 7FL

T: 01489 444687
E: natssafeguarding@nats.co.uk
W: http://www.nats.aero

19th August 2021

Your Ref: LA11/2021/0788/PAD
NATS Ref: SG31909

Dear Sir/Madam

Re: Glenmoran Road, Strabane (Owenreagh land Craignagapple Wind Farm)

The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.

However, please be aware that this response applies specifically to the above consultation and only reflects the position of NATS (that is responsible for the management of en route air traffic) based on the information supplied at the time of this application. This letter does not provide any indication of the position of any other party, whether they be an airport, airspace user or otherwise. It remains your responsibility to ensure that all the appropriate consultees are properly consulted.

If any changes are proposed to the information supplied to NATS in regard to this application which become the basis of a revised, amended or further application for approval, then as a statutory consultee NERL requires that it be further consulted on any such changes prior to any planning permission or any consent being granted.

Yours faithfully

NATS Safeguarding

Infrastructure Planning
Westland House
Old Westland Road
Belfast
BT41 6TE

Tel: 028 90354813 Ext 20646
www.niwater.com

Derry and Strabane
Local Planning Office
Orchard House
40 Foyle Street
Londonderry
BT48 6AT

Your Ref:
LA11/2021/0788/PAD

Our Ref:

Date: 3 August 2021

Dear Sir / Madam.

PLANNING CONSULTATION REFERENCE – LA11/2021/0788/PAD

NI Water would advise as follows –

This proposed development could have a significant impact on existing NI Water infrastructure. Although the proposed site is not located within a water catchment boundary, the turbine locations could conflict with existing NI Water telemetry links between our control centre and various telemetry outstations.

Yours faithfully

Alan Moore
Infrastructure Planning

giving nature a home
Northern Ireland

DfI Strategic Planning Division
Clarence Court
10 – 18 Adelaide Street
Belfast
BT2 8GB

19 August 2021

To whom it may concern,

Application Reference: LA11/2021/0788/PAD
Proposal: Repowering of the operational Owenreagh I Windfarm and modification and extension of the permitted Craignagapple Windfarm
Location: Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill, approximately 6km south east of Artigarvan village, Co. Tyrone.

The RSPB is Europe's largest voluntary nature conservation organisation and is supported by over 1 million members, over 10,000 of which reside in Northern Ireland (NI). As such we thank you for sending the above named consultation through to us for comment. Please find below our recommendations as to what we expect the Environmental Statement (ES) should contain as well as advice on data collection and surveys. Our comments are mainly focused on the ecological information provided with particular emphasis on the ornithological information as this is where our expertise lies.

We recommend the agent contacts both the Northern Ireland Environment Agency (NIEA)[1] and the Northern Ireland Raptor Study Group (NIRSG)[2] for an up to date history of breeding raptors in the area if they have not already. Of special interest may be hen harrier and merlin, both Annex 1 listed species under the EU Birds Directive 2009 (codified version)[3]. There may be species of conservation concern present including curlew, snipe, red grouse and meadow pipit, all of which are of a high or medium conservation concern (breeding populations) across Ireland[4]. We would expect these species to be carefully considered within the EIA.

The local Council can be contacted for any available data gathered from other local wind farm developments[5]. RSPB data can be requested using the link below[6] where access to other data sources can also be found such as the National Biodiversity Network Gateway (NBN)[7] and the British Trust for Ornithology (BTO)[8] through our website.

[1] NIEA
[2] NIRSG
[3] Birds Directive
[4] Gilbert G., Stanbury A. & Lewis L. (2021) Birds of Conservation Concern in Ireland 4: 2020 – 2026. *Irish Birds* **45**: 1-22
[5] Homepage | Planning NI
[6] The RSPB: Mapping and GIS: Data requests
[7] National Biodiversity Network Gateway
[8] Such as The British Trust for Ornithology (BTO); BTO

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In-Perpetuity Consent

With regards to the applicants proposal to seek an in-perpetuity consent for the development[9], given the uncertainty around a lot of predictions and the potential changes in climate, bird populations, technology, knowledge on impacts etc., we do not think an in-perpetuity consent is appropriate.

Thus, we strongly advise that any permission for wind farm development is granted on a temporary basis as this will allow for review of the impacts of the proposal in light of the information available at the time. In addition, it would seem extremely difficult to assess the potential effects for the operational phase of the proposed development without any time limits. In the event of repowering being considered again in the future, a review and environmental assessment of the proposal would be required.

EIA Recommendations

We would expect the EIA to provide sufficient information to allow an assessment of the impacts of the proposed development on the environment, in accordance with The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017[10]. Specific matters to be dealt with are listed below.

Sections one and two detail the survey work and analysis the RSPB feels are necessary to satisfy the requirements of the EIA Regulations, while section three considers the mitigation and enhancement options which could be provided.

1. Survey/desktop study recommendations

Site Designations
We advise that NIEA are contacted regarding nature conservation designations[11] and to view the relevant Area Plans with regard to both statutory and non-statutory designations.

With regards to the location of Natura 2000 sites and connectivity between them and the proposed site, we recommend consultation with NIEA to ensure The Conservation (Natural Habitats, etc) NI Regulations 1995[12] are complied with.

Habitats
We note that the EIA planning application will include a habitat survey and assessment to JNCC Phase 1 level. The identification of priority biodiversity habitats[13] is particularly important. In particular, active blanket bog is a priority habitat listed under Annex I of Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive). Blanket bog is composed of peat, which is a significant store of carbon as well having an important carbon sequestration role when it is in its active state. The principle

[9] As per Q2.2 of the Scoping Request Document
[10] Planning Regulations
[11] Protected Areas
[12] The Conservation Regulations
[13] Priority habitats

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aim of wind farm development is to reduce carbon dioxide emissions and combat global warming[14]. Serious consideration must therefore be given to whether the reduction in CO_2 emissions arising from wind farm developments justifies the potential reduction in the carbon storing properties of peatland. Analysis must also take into consideration any additional carbon arising from the projects, such as the manufacture, transport, construction and ongoing maintenance of the turbines and concrete bases[15].

The Scottish Government has developed a carbon calculator to help developers measure emissions savings associated with developments on peatlands using a full life cycle analysis approach. Details can be found below:

- http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Energy-sources/19185/17852-1/CSavings

NIEA advocate Planning Policy Statement 18 Renewable Energy (PPS18)[16] and have also developed the following advice note on active peat to help guide potential developments on peatland sites:

- https://www.daera-ni.gov.uk/sites/default/files/publications/doe/natural-guidance-NIEA-natural-heritage-development-management-team-advice-note-2012.pdf

Birds

We note that the EIA planning application will include bird surveys and assessments. From the details given in the Scoping Request document, we are content with the level of bird surveys carried out covering two breeding and two non-breeding seasons. We also note that an additional breeding season survey is being carried out in 2021.

While the full methodologies used for the bird surveys are not given in the scoping document, we note that it is stated that all conformed to the recommended guidance by NatureScot (previously SNH).

It is vitally important that approved methodologies are employed, to ensure that the EIA gleans all the information necessary in order that an informed view as to the existing nature conservation interest of the site can be reached. In the absence of this, uncertainties will be built into the EIA, which will mean that objections may be lodged to the application on the grounds of an inadequate EIA, and that those who wish to lodge objections may cite the precautionary principle. The need to re-survey the development site and vicinity may hold back the decision over the development proposal by as much as a year.

The most up to date guidance available from NatureScot and Natural England on surveys, monitoring and assessing the effects of windfarms can be found at the following locations:

- NatureScot - Wind Farm Impacts on Birds

[14] Nayak, D.R. *et al* (2010): *Calculating Carbon Savings from Windfarms on Scottish Peatlands – A New Approach*

[15] Scottish Government *(2011): Calculating Potential Carbon Losses & Savings from Wind Farms on Scottish Peatlands: Technical Note*

[16] PPS18

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- NatureScot - Recommended bird survey methods to inform impact assessment of onshore wind farms
- Natural England - Making space for renewable energy: assessing on-shore wind energy development

In addition, the following peer reviewed papers discuss breeding bird distribution and foraging raptor activity on existing windfarms and report on both spatial and temporal disturbance levels to certain upland species:

- Pearce-Higgins, J. W et al. (2009): The distribution of breeding birds around upland windfarms: Effects of windfarms on upland breeding birds. *Journal of Applied Ecology* 2009, 46, 1323-1331

- Pearce-Higgins, J.W et al. (2012): Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 2012, 49, 386-394

We expect these papers to be used to help quantify the potential level of disturbance and loss of species post-construction from proposed sites and therefore aid the choice of suitable sites and areas of land, on or off-site, for successful habitat management. It is particularly relevant if breeding waders[17] are on or near to a proposed site and/or foraging hen harriers or buzzards are present.

The cumulative impacts of this proposal with any nearby windfarms or other plans or projects, should also be assessed.

Decommissioning
We recommend that a full decommissioning plan should be included within the EIA. This should include an assessment of the decommissioning of the existing Owenreagh I&II wind farms as well as the future decommissioning of the proposed development should it be approved.

2. Analysis

The EIA must provide an assessment of the possible impacts of the development on the interests described by the surveys. These possible impacts should include *inter alia* direct impacts, effects due to disturbance and indirect impacts.

The direct, physical impacts on the development should be addressed, including:

- collision risk,
- direct land-take by structures including masts, buildings, roads, tracks, fences and drainage ditches,
- disruption of hydrology, in terms of saturation on the down-slope sides of roads, tracks and drying-out on the up-slope sides,
- the creation of sumps through built development, with consequent saturation and desiccation effects, and
- works associated with the construction of the development, including vegetation and soil/peat removal and storage, borrow pits, temporary compounds etc.

[17] Such as snipe and curlew

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Disturbance effects could arise in each phase of the development – construction, operation and decommissioning. Possible causes of disturbance are noise, vibration, dust, and the physical presence of construction equipment, perhaps providing predator vantage points, and the presence of personnel associated with construction and site security. The RSPB's concern centres on whether disturbance factors would result in birds being forced to relocate to sub-optimal habitats.

Indirect impacts may include:

- agricultural intensification arising from the increased accessibility of the development site and surrounding areas to stock due to construction of roads and tracks, and
- increased public disturbance due to the presence of those who wish the view the turbines from close up, and by virtue of increased accessibility.

3. Mitigation, enhancement and monitoring

Once sufficient information is available to conclude whether the development will have impacts on the site, adverse or otherwise, the EIA should outline mitigation measures as appropriate.

The broad headings under which the RSPB would be keen to discuss mitigation (without prejudice) would be:

- institution of agricultural management and access regimes which favour important bird species through habitat management and possibly habitat creation,
- time-related restrictions on construction in relation to nesting periods,
- precise location and orientation of built development within the development site, and
- removal of some tracks/roads after construction.

The RSPB advocates *no loss of biodiversity* to development, through appropriate mitigation and compensation where necessary. Finally, we would encourage suggestions on enhancing the biodiversity of the development site and its vicinity and would welcome the opportunity to discuss such concepts with the developer.

Both mitigation and enhancement may happen on or off-site. This can be facilitated through the local community or local landowners and can benefit local biodiversity whilst also providing services such as carbon storage or improved water quality.

Monitoring should take place for all relevant species found on site (informed by the surveys). The "Before After Control Impact" approach should be used to add rigour to the process. The RSPB is of the opinion that survey and monitoring results should be published, in order to enhance understanding of the relationships between windfarms and biodiversity.

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We reserve the right to make further representations in relation to this matter and if you require further information in relation to issues raised in this letter, please do not hesitate to contact the Conservation Officer.

Yours sincerely

Conservation Officer
RSPB Northern Ireland

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Environment, Marine and Fisheries Group

& NIEA

Department of
Agriculture, Environment
and Rural Affairs
www.daera-ni.gov.uk

Planning Response Team
Klondyke Building
Cromac Avenue
Gasworks Business Park
Lower Ormeau Road
Belfast BT7 2JA
Telephone: 028 9056 9604

Date: 27 October 2022

Dear Sir/Madam,

Planning Application Ref.:	LA11/2021/0788/PAD
Location:	Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone.

Proposal:

Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Thank you for your consultation on the above which was received by the Department on 02/08/2021.

This letter provides a single combined response for your consultation request across all of DAERA's area of environmental responsibility. Summary comments in relation to the reason for consultation are provided in the table below at Annex A, and, where appropriate, more detailed advice is enclosed and attached to this letter.

You should be aware that, in the absence of comment, no inference can be made on DAERA's position with regard to other environmental matters. It is the responsibility of the planning authority to ensure that all risks to the environment and requirements under environmental legislation and planning policy have been considered.

This advice and guidance will enable you to identify and consider if there are other potential risks to the environment due to impacts from the construction and operation of the proposed development and also its location.

In addition, we would also refer you to DAERA's published advice and guidance on development proposals where there is potential for effects on the natural and marine environments and fisheries interests, available at: https://www.daera-ni.gov.uk/topics/environmental-advice-planning.

As the Planning Authority is the competent authority under The Conservation (Natural Habitats, etc.) Regulations 1995 (as amended), this responsibility extends to the carrying out of Habitat Regulations Assessments (HRAs) before a planning decision is made.

Should you require assistance or if you wish to discuss anything further, please do not hesitate to contact the Planning Response Team using the contact details below.

Kind regards.

Planning Response Team

On behalf of DAERA

Email: **planningresponse.team@daera-ni.gov.uk**

Annex A

Advice Provided By:	Summary
Water Management Unit and Inland Fisheries	Water Management Unit and Inland Fisheries would provide the following advice
Drinking Water Inspectorate	Standing advice issued including link to PWS app and need to consult with NIW. Relevant scoping questions answered within main response document
Regulation Unit	The Land and Groundwater Team, Regulation Unit has considered the PAD proposal and on the basis of the information provided refers to standing advice.
Natural Environment Division	NED acknowledge the PAD submission and Scoping report prepared by Arcus Consultancy Services and dated July 2021. NED has considered the information provided in these documents and has provided comment below.

Planning Reference: LA11/2021/0788/PAD

Existing operational Owenreagh Wind Farm (I&II) located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone: Repowering of the operational Owenreagh I Windfarm & Modification and Extension of the Permitted Craignagapple Windfarm

Section Reference: PQ 2021/24

The Drinking Water Inspectorate (DWI) is supportive of Pre Application Discussions (PADs). The DWI has considered the request and notes the information contained in:

- EIA Scoping Request;
- Pre-Application Discussion ("PAD") Statement.

Response to Key Questions for Consultees:

The DWI are providing a response to Q10.1 and Q10.2. All other questions are considered outside of the remit of DWI.

Q10.1: DWI are content with the proposed methodology and scope of the hydrology and hydrogeology assessment

Q10.2: Further information which would be useful in the preparation of the hydrology and hydrogeology assessment is detailed below:

Summary:

At the pre-application stage of a development there is limited information about the circumstances, scope and nature of the project and therefore the DWI can only provide 'general' advice at this stage.

A development must not impact on either the quality or sufficiency of a private water supply. Taking into account the scale, type, location and the potential impacts the proposal may have on private water supplies, a developer should as appropriate:

(i) undertake searches and investigations; and,

(ii) follow the Standing Advice / Guidance, as detailed within Considerations.

Considerations:

1. Identification of Private Water Supplies: A development must not impact on either the quality or sufficiency of a private water supply, and mitigation measures must be put in place, where required, in the protection of such drinking water supplies. Therefore dependent on the scale, type, location and the potential impacts the proposal may have on such supplies the developer should, if appropriate, undertake a scoping exercise to determine the location of any private water supplies. Details on undertaking a search for potential private water supplies in the vicinity of the proposed development can be undertaken by accessing the following link: https://docs.spatialni.gov.uk/applications/drinkingwaterinspectorate/Generalinformation.pdf.

It should be noted that not all private water supplies are registered with the DWI. Supplies to single domestic dwellings do not require registration but the DWI are obliged by regulatory duty to provide Advice and Guidance when necessary. It is suggested that the applicant should contact any landowners within 500m of a turbine to determine if any of the properties utilise a

private water supply for any purpose. If a private supply is identified, actions should be taken to ensure no impact to quality or sufficiency.

Further information on private water supplies can be obtained through contacting DWI by emailing at dwi@daera-ni.gov.uk or telephone 028 9056 9282 or from the DWI website: https://www.daera-ni.gov.uk/articles/private-water-supplies.

Please be aware that if the applicant intends to use any borehole / private water supply on site, and its intended usage would abstract over $10m^3$ /day then it will require further consultation with the NIEA Abstractions and Licencing Team - more information is available at: https://www.daera-ni.gov.uk/articles/applying-abstract-or-impound-water.

2. Engagement with NI Water (Public Water Supplies): All catchments are considered as Drinking Water Protection Areas (DWPAs) under Article 7 of the Water Framework Directive. The nationwide basins are utilised by the primary Water Undertaker, Northern Ireland Water Limited (NI Water), to provide the public supply of water. Consideration should be given to the location of any infrastructure and protection of DWPAs.

Consultation would be required to ensure that there are no public drinking water sources which have the potential to be impacted by the plan. If public drinking sources could be impacted, mitigation actions must be provided to ensure quality and sufficiency of supply.

Consultation with NIW is also encouraged from an early stage, in order to establish capability of the public water system infrastructure if required.

3: Standing Advice: The developer is directed to the following list of standing advice which should, as appropriate and relevant, be considered in relation to the scale, type, location and potential impacts the proposal may have on the water environment:

https://www.daera-ni.gov.uk/publications/standing-advice-development-may-have-effect-water-environment-including-groundwater-and-fisheries.

4: Borehole and Wells Decommissioning: As this is at the PAD Stage, we do not have the information as to whether there are boreholes within the proposed site boundaries. If a borehole or well will be advanced as part of any site investigation works, or is historically cited within the site boundary and is required to be decommissioned the following guidance should be followed:

https://www.sepa.org.uk/media/34618/decommissioning-redundant-boreholes-and-wells.pdf*.

Water Management Unit & Inland Fisheries

Planning Reference Nº: LA11/2021/0788/PAD

Section Reference: WMU/PC/ 33289-1

Baseline

Water quality baseline information can be obtained from NIEA's online information request web viewer: https://www.daera-ni.gov.uk/articles/information-requests

Key environmental considerations

At the pre-application stage of a development there is limited information about the circumstances, scope and nature of the project and therefore Water Management Unit can only provide 'general' advice.

Water Management Unit would direct the attention of the applicant / agent to all the Agency's Standing Advice guidance documents.

The following DAERA Standing Advice documents will be particularly relevant to this application:

- DAERA Standing Advice on Pre-Application Discussion Advice
- DAERA Standing Advice on Pollution Prevention Guidance
- DAERA Standing Advice on Commercial or Industrial Developments
- DAERA Standing Advice on Sustainable Drainage Systems
- DAERA Standing Advice on Discharges to the Water Environment
- DAERA Standing Advice on Abstractions and Impoundments

All standing advice referred to in this response unless otherwise stated can be found at the following link www.daera-ni.gov.uk/water-environment-standingadvice

Environmental information required

Water Management Unit would request that any future consultation / environmental statement clearly demonstrate the following:

- How foul sewage will be dealt with during the construction phase of the development;
- How surface water will be managed during both the construction and the operational phases of the development
- The application must clearly demonstrate compliance with all the relevant precepts contained in DAERA Standing Advice on Pollution Prevention Guidance including identifying all necessary mitigation measures to protect the aquatic environment during these works.

- Clearly identify all works in / near or liable to affect a waterway. Where culverting is proposed the applicant should clearly identify the length and position of any proposed culvert.

The applicant should note and ensure that any assessment will need to show consideration of the impacts and required mitigation for the points listed above.

Further Guidance

The potential threats to the aquatic environment during both the construction and operational phases from the likes of cement, concrete, grout, fuels/oil/hydrocarbons and suspended solids from earthworks must be fully considered, and suitable mitigation and pollution prevention measures commensurate to the perceived risks must be identified.

(The applicant intends scoping out the decommissioning phase. Water Management Unit notes and agrees that the environmental impact on the aquatic environment will be of a lesser magnitude than that of the construction phase. However the applicant should note that regardless of scoping these out of the assessment appropriate mitigation measures will need to be identified and implemented during these closure works).

* The applicant should note and use the definition of a 'waterway' as defined under the Water (Northern Ireland) Order 1999:

> *"Waterway" includes any river, stream, watercourse, inland water (whether natural or artificial) or tidal waters and any channel or passage of whatever kind (whether natural or artificial) through which water flows.*
>
> *In this Order any reference to a waterway includes a reference to the channel or bed of a waterway which is for the time being dry.*

Water Management Unit notes the intention to supply an outline CEMP (Construction Environmental Management Plan).

Details of all mitigating measures to address the environmental impacts on the aquatic environment should be presented in the CEMP. All works in near or liable to affect a waterway should be clearly detailed.

Provision of a CEMP must demonstrate that best practice and appropriate mitigation will be applied during the construction, deconstruction and operational phases of the application. This should include pollution prevention measures to protect groundwater and all waterways.

Best practice and appropriate mitigation must be applied in accordance with NIEA's published pollution prevention guidance.

CEMP should:

- Identify the perceived risks to the aquatic environment e.g. from cement, concrete, grout, fuels/ oil/ hydrocarbons and suspended solids,
- Reflect the Source Pathway Receptor model to identify risks to waterways and the measures to mitigate against these.
- Identify the mitigation measures employed to minimise the risk of pollution to any waterway (as defined by the Water (NI) Order 1999) e.g.

    1. Safe refuelling, handling and storage practices for earth stockpiles and secondary containment for chemicals, oil, fuels etc.
    2. Emergency spill procedures should be addressed and should include the NIEA pollution hotline 0800 80 70 60 along with a timeframe for response. For example "any spillages / pollution incidents should be reported to the NIEA water pollution hotline within 30 minutes of the incident occurring unless it is not safe to do so"

The CEMP must demonstrate adherence of working practises to the precepts contained in relevant PPG's /. GPP's

The CEMP should include all necessary pollution prevention measures to protect the water environment during the development of this proposal.

The applicant must refer and adhere and the CEMP must reflect, all the relevant precepts contained in DAERA Standing Advice Pollution Prevention Guidance. It should be noted where appropriate further advice can be found (PPG/GPP) relating to a large range of topics that are relevant to this proposal.

All mitigation measures must remain in place until such times as there is no longer a threat to the aquatic environment.

The applicant should note that all guidance / best practice identified / quoted in any environmental statement or CEMP whether DAERA advice or external (PPG / GPP or CIRIA) must be the most up to date versions available.

The applicant must note that regardless of whether they submit a CEMP to be agreed in principle with Water Management Unit Pollution Prevention Team, this document can only ever at best be indicative of the mitigation measures that will be required. No two situations at a construction site are ever the same. For avoidance of any doubt the contractor / person carrying out the works are responsible for ensuring that any and all required mitigation measures are in place and ultimately under the Water (Northern Ireland) Order 1999 are liable for any discharge or deposit, whether knowingly or otherwise, of any poisonous, noxious or polluting matter so that it enters a waterway or water in any underground strata.

Water Management Unit Pollution Prevention Team will be happy to advise the applicant / contractor on the CEMP, provide clarity on any of the points raised above and give any other pollution prevention advice they may require. nieapollutionprevention@daera-ni.gov.uk

Where culverting is proposed the NI Planning Portal Case Officer should consider if it complies with Planning Policy Statement 15: Planning and Flood Risk Policy FLD 4. The applicant should refer and adhere to the precepts contained in DAERA Standing Advice Culverting.

Water Management Unit notes the intention to utilise borrow pits.

The use of borrow pits should be avoided unless no practicable alternative exists. However, where the applicant proposes to use a borrow pit Water Management Unit would expect to see detailed investigations in relation to the need for and impact of such facilities contained within the Environmental Statement.

Information should be provided regarding the location, size and nature of these borrow pits including the depth of the borrow pit floor and the borrow pit final reinstated profile. The impact of the borrow pit on the water environment should be assessed as part of the overall impact of the scheme, in relation to both surface water and groundwater impacts.

Detailed avoidance and mitigation measures should be proposed within the Environmental Statement for any impacts identified. Reinstatement plans and timescales for reinstatement should also be detailed.

Regarding peat. Water Management Unit would like to point out that they are not the competent authority to comment on any peat stability issues. If peat instability was likely at the site Water Management Unit would have concern regarding potential impacts on surface waters.

Therefore if peat stability may be an issue at this site Water Management Unit recommend the Planning Authority should consider if this has been adequately addressed and consult the relevant competent authority for any considerations they might have.

Discharge consent, issued under the Water (Northern Ireland) Order 1999, is required for any discharges to the aquatic environment and may be required for site drainage during the construction phase of the development. Any proposed discharges not directly related to the construction of the development, such as from septic tanks or wash facilities, will also require separate discharge consent applications. The applicant must refer and adhere to the relevant precepts contained in DAERA Standing Advice Discharges to the Water Environment.

Should the water table to be encountered during these works In accordance with the Water Abstraction and Impoundment (Licensing) Regulations (Northern Ireland) 2006 (as amended) it is a mandatory requirement that upon the abstraction and/or diversion and/or impoundment of water from the natural river channel/lake, coastal or groundwater sources, an abstraction/impoundment licence should be obtained unless the operations specified are Permitted Controlled Activities. The applicant must refer and adhere to the precepts contained in DAERA Standing Advice Abstractions and Impoundments.

The discharge of water from a dewatering operation will require consent to discharge, under the Water (Northern Ireland) Order 1999. The applicant must refer and adhere to the relevant precepts contained in DAERA Standing Advice Discharges to the Water Environment.

Water Management Unit would encourage the use of SuDS (Sustainable Drainage System) techniques (where appropriate) to deal with uncontaminated site drainage. Water Management Unit recommends the applicant refers and adheres to the precepts contained in DAERA Standing Advice Sustainable Drainage Systems

The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017 requires us to protect the status of water bodies from deterioration, and where necessary and practicable, to restore water bodies to good status/good ecological potential.

Effective mitigation measures must be implemented to protect the water environment and surrounding water bodies from any discharge into them that may damage ecological status and to ensure that the objectives for the water body are not compromised nor the objectives in other downstream water bodies in the same and other catchments.

The proposed development must not cause any deterioration in status to the river water body in which it is situated in or any other water bodies in the surrounding area. Also, the proposal should not prevent these river water bodies or any other water bodies in the surrounding area, from achieving objectives.

If, after scoping their proposal against the Standing Advice, the applicant requires proposal-specific advice then Water Management Unit will be happy to provide comment at that stage.

The applicant should be informed that it is an offence under the Water (Northern Ireland) Order 1999 to discharge or deposit, whether knowingly or otherwise, any poisonous, noxious or polluting matter so that it enters a waterway or water in any underground strata. Conviction of such an offence may incur a fine of up to £20,000 and / or three months imprisonment.

The applicant should ensure that measures are in place to prevent pollution of surface or groundwater as a result of the activities on site, both during construction and thereafter.

The following is the response of Inland Fisheries of the Department for Agriculture, Environment and Rural Affairs (DAERA) to this application.

Considerations

Inland Fisheries would provide the following advice.

Explanation

The Loughs Agency is the lead body for provision of advice regarding impacts to salmonid and inland fisheries interests within the catchments of Lough Foyle and Carlingford Lough. Consequently, said agency should be consulted in relation to this application. DAERA

Inland Fisheries will provide fisheries advice for those areas outside of the catchments of Foyle and Carlingford Loughs.

Informatives

Northern Ireland through the UK and EU is a signatory to North Atlantic Salmon Conservation Organization (NASCO), under which we are legally obliged to protect, restore and enhance the habitat of the North Atlantic Salmon species.

We would like to draw the applicant's attention to Section 47 of the Fisheries Act (NI) 1966, which covers the applicant's responsibilities relating to Penalties for Pollution and the consequences of causing or permitting the release of any Deleterious materials into any waters.

Planning Reference: LA11/2021/0788/PAD

Section Reference: AE1-21-5008

Considerations

Regulation Unit, Land and Groundwater Team (LGW) has considered the PAD proposal and on the basis of the information provided refers to standing advice.

Explanatory note

These considerations are made upon review of:

> Arcus Consultancy Services: Owenreagh I repower and Craignagapple Modification and Extension - Scoping Request of wind farm located on the eastern edge of the Sperrin Mountains on Owenreagh Hill approximately 6 km south east of Artigarvan village Co. Tyrone for Orsted Onshore Midco Holdings prepared in July 2021

The following questions were asked in the above document:
Q10.1: Are consultees content with the proposed methodology and scope of the hydrology and hydrogeology assessment?
Q10.2: Do consultees have any information that would be useful in the preparation of the hydrology and hydrogeology assessment?

With regard to the hydrogeological aspects of this section of the report, to ensure LGW are content with the proposal and all information is submitted, please see advice below.

Standing Advice

Key environmental considerations

The foundations of wind turbines have the potential to impact on the groundwater environment for example groundwater flow paths, groundwater receptors (aquifers) or secondary receptors (including private water supplies). An assessment of the potential impact facilitates LGW to form an opinion on the application. Groundwater receptors should be identified and the risk of potential impact assessed and, where required, mitigation measures should be identified. These steps should be assessed through both a desktop and field based Water Feature Survey.

Further information is provided within “Environmental information required” and “Baseline environmental information”.

Environmental information required

Please see our guidance available on the DAERA website on ‘Water feature surveys’ and ‘Wind farms and groundwater impacts’ available at:

https://www.daera-ni.gov.uk/publications/best-practice-guidance-documents

It is recommended that the applicant seeks the professional advice of a hydrogeologist. Hydrogeologists (not hydrologists) can be identified through internet search, Yellow Pages or the Ends Directory (www.endsdirectory.com)

In addition to the guidance listed above LGW would direct the attention of the applicant / agent to the planning advice which is available on the DAERA website under the Topic: **Environmental Advice for Planning** with particular reference to the following pages:

https://www.daera-ni.gov.uk/topics/environmental-advice-planning

https://www.daera-ni.gov.uk/articles/wind-energy-installations

Baseline environmental information

Groundwater baseline information which will feed into a water feature survey can be obtained from our online River Basin Map Viewer at https://appsd.daera-ni.gov.uk/RiverBasinViewer/ and our WMU Water Information Request Viewer at https://appsd.daera-ni.gov.uk/WaterInformationRequest/

Information on private water supplies sourced from groundwater might be obtained from:

- Northern Ireland Environment Agency groundwater monitoring sites: Information on the sites can be obtained by either the WMU Water Information Request Viewer or by contacting waterinfo@daera-ni.gov.uk
- Abstraction & Impoundment Licensing: Information on the licensed sites can be obtained by either the WMU Water Information Request Viewer or by contacting waterinfo@daera-ni.gov.uk
- Drinking Water Inspectorate: Information on private water supplies can be obtained by contacting dwi@daera-ni.gov.uk
- Environmental Health section of the local council

Some layers displayed on the map viewers are also available as a digital dataset, which can be downloaded and used within your own project. Follow the guidance on the web page at https://www.daera-ni.gov.uk/articles/wmu-digital-dataset-downloads

Natural Heritage and Conservation Areas

Planning Reference No: LA11/2021/0788/PAD

Section Reference: CB30595

Date of response: 26/10/2022

NIEA, Natural Environment Division (NED) acknowledge receipt of a consultation for an Environmental Impact Assessment – Pre-Application Discussion request from the Planning Authority in relation to the Owenreagh 1 Windfarm Repower and Craignagapple Wind farm Modification and Extension located approximately 5km east of Strabane and 6 km southeast of Artigarvan, in County Tyrone.

NED acknowledge the PAD submission and Scoping report prepared by Arcus Consultancy Services and dated July 2021. NED has considered the information provided in these documents and has provided comment below.

NED have also engaged in pre-Application discussion meetings with applicant on and 21st October 2021 and 24 October 2022. The results of initial surveys, outline habitat management/restoration proposals and scope of the ecological assessment were discussed.

NIEA, Natural Environment Division (NED) has also carried out a desktop assessment of currently available information for the site – see results below. Please note that this information is correct at this point in time but should be reviewed before submitting any Environmental Statement (ES) or planning application. You should also refer to the recommended websites, detailed below, for other relevant information.

Please also find enclosed general advice on the scope of work that NED considers necessary to assess the potential effects on natural heritage interests and to undertake an EIA for this development proposal. The assessment should be as comprehensive as possible and follow the guidance detailed below. This will reduce the likelihood of further environmental information being requested which could further delay the processing of the planning application.

If you have any queries, or would like to discuss any of this advice, please contact NED, quoting the above reference number.

Site Specific Information

The developer has submitted a Scoping Report in support of a proposal to re-power the existing Owenreagh 1 Windfarm, requiring decommissioning of the existing turbines and replacement of these with larger models with a maximum tip height of 180m and a rotor diameter of 136m (Arcus 2021). It is also proposed to modify and extend the adjacent consented Craignagapple Windfarm (J/2010/0481/F), increasing the number of turbines from the current six to thirteen larger units with similar dimensions to the replacement turbines at Owenreagh 1. The applicant proposes to seek an in-perpetuity consent for this project. Decommisioning and repowering are proposed to operate in tandem but would still require considerable works.

NED can provide the following information in relation to the development proposal in addition to that presented within the scoping report:

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- The site is located within the Sperrin AONB
- The proposed site is hydrologically connected to the River Foyle and Tributaries ASSI/SAC
- Large portions of the site have previously been mapped as peatland habitat
- The southeastern section of the site is within the catchment of, and contains tributaries to the Dunny Boe Burn River body
- The northwestern section of the site is within the catchment of, and contains tributaries to the Glenmornan River body
- The southern most tip of the site is within the catchment of the Douglas Burn River body.
- Lagavadder and Sperrin historic woodlands are located 0.4 km to the north of the site
- An area of possible ancient woodland is located approximately 1.1km to the northeast of the site
- Previous records within the site include Breeding Curlew (NI Priority Species, Amber listed, 2009 & 2011) and southwest of the site boundary (1987), Snipe (Annex 1, Amber listed, 2011); a sighting during the breeding season of Kestrel (2011) and Sparrowhawk (2011) and a winter sighting of Merlin (2011).

Pre-application discussion meeting

A request was made to meet with NED to discuss potential effects and approach to key ecology issues including potential effects upon habitats and active peat. NED met with the applicant on 21st October 2021 and 24 October 2022.

An outline of the planning history and site operations were presented along with the applicants proposed approach to active peat assessment, preliminary active peat survey information and potential future habitat management proposals. NED highlighted the need to first follow an avoidance approach to sensitive habitats and outlined the particular sensitivities of, and protection afforded to, active peat. In response to the applicants comments regarding the degraded nature of much of the blanket bog at the site from initial survey, NED advised that degraded blanket bog is NI priority habitat. Regarding the Habitat Management Plan outline, NED advised that it should focus on outcomes, be accompanied by signed landowner agreements at submission stage and be evidence driven to provide the appropriate confidence in delivery. NED also advised an integrated approach to the Peat slide risk assessment and ecology assessment to better inform assessment of impacts to natural heritage features.

A further meeting was requested by the applicant to discuss the potential suitability of novel peatland restoration approaches developed in collaboration with Queens University researchers. The meeting was facilitated by NED on 24 October 2022 and the agents briefly outlined their proposed approach to peatland restoration and the related uncertainties and context for their inclusion. A brief update on the progress of further survey work was also presented. The applicant was advised that NED were not averse to the inclusion of novel techniques as part of proposals as long as they are subject to robust risk assessment and supported by appropriate rationale and evidence base. NED highlighted the need to include peat slide risk in any proposal for blanket bog rewetting, careful selection and assessment of potential borrow pits to be used and the need for landowner legal consents to ensure an appropriate timeframe for habitat improvement. The applicant was advised that NED welcome the focus on the use of appropriate

collaboration with various expertise, the use of evidence and appropriate monitoring to enable adaptive management and that NED would consider the proposals in detail once submitted to make an assessment on the likelihood of success in achieving appropriate habitat management outcomes.

Scoping response

Zone of Influence

A zone of influence (ZoI) of 2 km for biological record investigation, increased to 10km for bats is proposed and 15km radius for internationally and nationally designated sites. The requirement to extend the ZoI consideration for potential for effects to specific features exists is accepted in the report.

Designated Sites

The application site is hydrologically linked to the following national, European, and international designated sites:

- River Foyle and Tributaries SAC, which is designated under the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended);
- River Foyle and Tributaries ASSI, which is declared under the Environment Order (Northern Ireland) 2002

In accordance with the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), the Competent Authority should ensure an assessment is carried out to determine if the proposal, either alone or in combination, is likely to have a significant effect on a European site and the qualifying features, in line with the site conservation objectives.

NED has considered the proposal and highlights the following as potential impacts on the designated sites;

1. Contamination of aquatic environment and associated habitats via sedimentation, hydrocarbon spills and leachate from building materials:

NED acknowledge receipt of the PAD Statement (dated June 2021) and the Scoping Request (dated July 2021) documents for the proposed repowering of the operational Owenreagh I Windfarm and modification and extension of Craignagapple Windfarm.

The proposed site is hydrologically connected to the River Foyle and Tributaries ASSI/SAC. NED is content that the Scoping Request document demonstrates how the potential impacts on the designated sites will be addressed, through the Habitats Regulations Assessment process and the Ecological Impact Assessment.

The following information should be considered within the above assessments:

- All potential pathways of surface water run-off, during construction, operation and decommissioning phases, which could cause pollution of any watercourses that are linked to the River Foyle and Tributaries ASSI/SAC.
- The construction of water crossings over watercourses linked to the designated sites.

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- Any risk of peat slide and the impacts this could have on the surrounding watercourses linked to the designated sites.
- The storage of materials, machinery, and fuels etc. and buffer zones from watercourses.
- The construction and decommissioning of the turbines and buffer zones from watercourses.
- The outcomes of the Aquatic and Fisheries Assessment.

All proposed mitigation measures for the above points should be clearly stated and demonstrated via drawings, in order for the department to fully assess the potential impacts on the designated sites.

The following information should be included in any future submissions to the Department in order to fully assess the potential impacts to the nearby designated sites:

1. All designated sites which are hydrologically linked to the proposed site should be included in the Habitats Regulations Assessment and Ecological Impact Assessment.
2. All proposed mitigation measures to prevent pollution of the watercourses linked to the designated sites should be clearly stated and demonstrated via drawings.

Informative

The applicant's attention is drawn to the following link, for standing advice on protection of the terrestrial and water environment:

• https://www.daera-ni.gov.uk/articles/standing-advice-0

Ecology

Habitats

Phase 1 habitat surveys undertaken by Woodrow Sustainable Solutions Ltd in Summer 2018/19 and September 2020/21 have been used to inform the scoping exercise in relation to habitat effects. The habitats on site are assessed as comprising acid grassland, improved grassland, species poor upland flush (possible NI priority habitat), sphagnum rich flush, wet heath and modified blanket bog which is degraded but with parts likely to correspond to NI Priority Habitat and active peat. Phase 1 and targeted NVC surveys were due to be repeated in 2021 and the results of these should be included in the ES.

The scoping report highlights an intention to avoid active peat or other priority habitats, as far as possible, and states that detailed consideration is given to their integrity and opportunities for restoration/enhancement. Section 8 Enhanced JNCC Phase 1 – Peat Habitat Study Methodology states that peat habitat survey will inform NVC survey assessment to ensure that the proposed design does not impact upon sensitive peat habitat such as active peat, fen, marsh or species rich flush. NED is content with this approach.

A bespoke classification system informed by the Development Management Team guidance on Active Peatland and PPS18 has been outlined in the report. As a first step habitats at the site will be classified into three categories: Active peat, possibly active peat and not active peat. While NED is largely content with these classifications, we do not consider the 1m peat depth limit for possibly active peat to be appropriate but welcome the proposed further fine assessment and

fine-scale mapping using indicator species, peat depth and hydrological condition of these areas. An active peat assessment following the indicative NIEA guidelines was carried out in May 2021 and an enhanced assessment to inform the ES was due to be conducted in summer 2021. Initial walkover surveys of hydrologically sensitive habitats are proposed to be undertaken jointly by an Engineer/Geologist, Hydrologist and Ecologist. NED welcome this approach.

NED acknowledge that turbine locations are due to be micro-sited to avoid significant impacts on sensitive habitats and this will be informed by a detailed hydrological study and that active peat and water quality have been identified as two key sensitive features for consideration in the ES. NED would take this opportunity to highlight that non-active peat areas may also qualify as protected NI priority habitats and there is also a requirement to avoid impacts to those under planning policy. Upland heath, non active blanket, hedgerows and stream/river habitats should also be avoided in the first instance.

In relation to water table measurement limits outlined in section 8.3.1 to be used in the assessment of areas of active peat, NED consider a water table not usually more than 5cm below or above the surface to be indicative however, where this is not present, the area may still be considered Annex 1 habitat as degraded peat capable of natural regeneration and decisions on classification of active peat should include consideration of all elements as proposed. Where other factors indicate the presence of active peat but the water table does not conform to the measurements stated it may not be appropriate to consider it non active.

Bats

Transacts and static detector surveys for bats were undertaken on a monthly basis from May to October 2018 and 2019 in accordance with Scottish Natural Heritage Guidance (2019). A bat casualty survey protocol agreed with NED was followed in 2020 and was due to be repeated in 2021. Three static activity surveys, correlating with the most recent proposal design, were also planned to be repeated in spring, summer and autumn 2021.

Initial survey results are indicated as low across the study area and focused along the adjacent forestry, around buildings and along gorse hedgerow. Suitable foraging and resting sites have also been identified along the haul route. Bat roost survey effort found 2 buildings to contain small bat roosts using dusk and pre-dawn emergence/re-entry survey following initial PRF survey. These surveys were also due to be repeated in 2021.

In relation to the repeat of static surveys at height, NED cannot make a definitive decision on the requirement for these without sight of the full survey results but are content to consider a robust rationale for their absence in conjunction with the full survey results once they are submitted.

NED are satisfied with the approach outlined for bat roost activity surveys to follow current BCT Guidance and the buffer proposed.

Mammals

Mammal survey to NIEA specifications have been undertaken annually since 2018. Survey for badger and otter included an appropriate survey area and included the installation of a wildlife camera under the road bridge crossing the Glenmornan River at the site which recorded otter

foraging and commuting. Both species have been identified as foraging within the site with otter spraint and badger hair identified. An active badger sett was also identified along the haul route.

Hare resting sites have been recorded within heath habitat at the site and four Red Squirrel surveys did not confirm presence within the adjacent forestry despite previous records and a confirm roadkill within 2.8km of the site on 1st June 2021.

NED are satisfied with the approach outlined in relation to mammal survey. Given that suitable Red Squirrel Breeding and / or key foraging habitat will not be affected by the development as outlined, NED agree that there is no requirement to repeat the Red Squirrel surveys.

The protection of fauna and their nesting/foraging resource are said to be a key consideration for the EIA.

Marsh fritillary *Euphydryas Aurinia*

A survey to identify areas of Marsh Fritillary Butterfly habitat in the form of stands of Devil's-bit scabious *Succisa pratensis* was undertaken in 2019 and discovered habitat likely to be sub optimal due to over grazing with little Devils bit scabious recorded. This survey was also due to be updated in 2021 and NED is satisfied that the applicant's approach to survey is appropriate.

Common Lizard *Zootoca Vivipara*

Surveys were conducted in September 2019 under NIEA licence and in accordance with NIEA survey specifications which only recorded 1 individual. Further survey for this species has since been undertaken (meeting, 21/10/22) and the results of this survey should also be included in the Environmental Statement (ES).

Aquatic Habitat Assessment

As the results of the aquatic habitat and fisheries assessment of significant watercourses within and close to the site, due to be conducted in summer 2021, have not yet been provided, NED recommend that it remains scoped into the assessment. NED are satisfied, in principle with the approach outlined and the results of these surveys should be included in the ES.

Habitat Management and Restoration Plan

The design of a habitat management and restoration plan will be informed further by specific survey and peat/hydrology assessment. NEDs assessment on approach the proposed approach to HMRP recommendations will be undertaken when full details have been supplied.

Scoping and effects assessment

NED welcome reference to CIEEM (2018) and NIEA guidance for the purpose of qualifying significant and cumulative effects on ecological features. NED is mostly content with the scoping decisions outlined in section 8.6.3 however, would highlight that habitats with sensitive hydrology can be affected by the development where they are in proximity to, but outside of, the footprint of the development.

Natural Heritage and Conservation Areas

Ornithology

It is proposed that the Ornithology chapter of the Environmental Statement will cover the following:

- Impact on designated sites
- Risk of collision by birds
- Impact on breeding raptors
- Impact on breeding waders
- Impact on winter raptor roosts (particularly for Hen Harrier)
- Impact on foraging and roosting by wintering waterbirds
- Cumulative impact assessment with other developments within 15km

A two-year programme of bird surveys has been carried out between April 2018 and March 2020. Additional surveys were also undertaken between March and August 2021. Surveys during the breeding season included vantage point surveys covering the windfarm site and a buffer zone of 500m radius, upland breeding bird surveys using methodology based on Brown and Shepherd (1993) with similar coverage to the vantage points but extending to an 800m radius for Curlew and priority species surveys for raptors and waders up to 2km. All breeding season surveys were carried out between March/April and August. Surveys outside the breeding season, between September and March, included vantage point watches and walkover surveys for all species. Potential roost sites for wintering waterbirds within 1km of the development site were also checked.

A summary of survey results from 2018-20, with limited quantitative data, has been provided. These indicate relatively low frequency of occurrence of raptor species within the development site and wider survey area. It is thought that Merlin (Schedule 1; Amber-listed species of conservation concern in Ireland) attempted to breed close to the boundary of the 500m buffer in 2018 but the nest location was not found. No further indications of nesting were detected in subsequent seasons, however, and flight observations were infrequent. Hen Harriers (Schedule 1; Amber-listed) were recorded on only three occasions and there was no evidence of breeding by this species within 2km. There were a small number of observations of Peregrine (Schedule 1) but there is no suitable nesting habitat for this species within the 2km survey zone. Kestrels (Schedule 1; Red-listed) were also infrequently recorded but it is possible that they nested in the wider local area, outside the buffer zone. There were also very few records of Sparrowhawk (Schedule 1). Buzzard (Schedule 1) was the most regularly occurring raptor in the survey area and is thought likely to have nested outside the 500m buffer in 2018. Confirmed nesting took place within 2km in 2017.

Two pairs of Curlew (Red-listed) were heard displaying at a location over 900m from the windfarm site early in the 2017 breeding season but activity ceased soon afterwards and there were no records of this species in subsequent years.

Snipe (Red-listed) are considered to breed at low density within the windfarm site and buffer zone and are also present in larger numbers during winter. Snipe breeding within 400m are

susceptible to long-term displacement by windfarm developments, particularly during construction (Pearce-Higgins et al 2009, 2012).

The development site is frequently used for foraging and loafing in winter by relatively small numbers of Golden Plover (Red-listed). Flocks of 10 – 160 individuals were recorded. There was no indication that this is a significant stop-over location for the species during migration periods, however. No evidence of breeding by Golden Plovers in the vicinity of the site was found and the habitat in the wider area is considered to be of poor quality.

Observations suggest that there are at least two Red Grouse (Red-listed) territories within the 500m survey area, with one of these possibly overlapping the windfarm site itself. It is considered that the buffer zone could hold a maximum of three to four pairs of grouse. Red Grouse breeding within 500m are susceptible to short-term displacement by windfarm developments, particularly during construction (Pearce-Higgins *et al* 2009, 2012).

There was no evidence that the windfarm site is located on an important flyway for migratory waterbirds. During the winters of 2018/19 and 2019/20, only two Whooper Swans (Schedule 1; Amber-listed) were observed in flight over the survey area. This indicates that the development would not pose a significant threat to this species.

The applicant has identified the following as potential effects on birds requiring to be addressed:

- Red Grouse: collision with turbines, particularly towers, and with new fencing.
- Golden Plover: collision with turbines.
- Snipe: disturbance and displacement of breeding birds. Habitat loss through new drainage within the site.
- Merlin: disturbance and displacement of breeding birds. Displacement from foraging habitat within the site and buffer zone as a result of habitat fragmentation.

NED Ornithology is satisfied that the above are the key issues associated with this proposal but would also add the risk of habitat fragmentation for Red Grouse. All the above risks require to be quantified and mitigation proposed. Compensatory habitat creation and management is likely to be necessary for Snipe and possibly for Red Grouse.

We are content that the survey programme carried out by the applicant to date will be sufficient to assess the impact of the project on bird populations. We therefore do not require any additional surveys to be carried out. The survey and assessment methodologies described are satisfactory, but we would request that collision risk modelling is carried out for all raptor species with sufficient data for meaningful analysis.

NED Ornithology has reservations regarding the applicant's intention to request in-perpetuity consent for this project. While, prior to full assessment of the survey data, it appears unlikely that this development would have a significant adverse impact on bird populations at the present time, it is possible that species distributions and patterns of movement may change in the longer

term, particularly under the influence of climate change. This may affect risk levels associated with the project. We would therefore prefer to see any consent initially being for a set time period with provision for extension on the basis of a review of impacts at that time.

References:

Arcus (2021*) Owenreagh 1 Repower and Craignagapple Modification and Extension: Scoping Request*. July 2021. Arcus Consultancy Services, Glasgow.

Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. (2009). The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology* 46: 1323-1331.

Pearce-Higgins, J.W., Stephen, L., Douse, A. & Langston, R.H.W. (2012) Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 49: 386-394.

Geology and Peat

The Phase 1 and phase 2 peat probing surveys should be undertaken in a way that results in a sufficiently detailed peat depth coverage to enable an assessment of habitat quality/sensitivity. NED notes that GSNI were generally satisfied with the PSRA methodology outline in their response to EIA scoping and would urge the planning authority to seek input from GSNI regarding the suitability of final, substantive proposals for assessing peat slide risk at the site, when they are submitted.

NED recommend that the density of probing locations is also informed by peat depth in neighbouring samples to create a more accurate and suitable map of peat depth. NED would also suggest that infrastructure and track locations are subjected to the same density of peat probing as turbine locations as the difference between these areas in terms of impact to peat stability and hydrology is not clear.

In general, NED welcome the comprehensive approach outlined to assess peat habitat condition at the site and agree that the identified policy, guidance, and methods proposed for the assessment of peat is appropriate for its purposes of assessment of impacts to natural heritage features.

Hydrology and Hydrogeology

Initial assessment has identified several surface watercourses, tributaries, and hydrologically sensitive habitats within the site boundary. Several dipwells at representative, but as yet undefined, locations are proposed for water table monitoring to inform an assessment of potential effects on active peat.

A Water Construction Environmental Management Plan (WCEMP) is proposed to be included as part of the embedded development design and will include methodologies, a watercourse crossings inventory (WCI) and mitigation measures to protect the hydrological environment.

NED is content with the scope presented for hydrology and hydrogeology assessment and would highlight that hydrological impacts and assessment are a key consideration for this development. Surface hydrology, impacts to river tributaries and effects to hydrologically sensitive habitats should be adequately assessed.

Natural Heritage and Conservation Areas

Climate Change and Carbon Balance

An outline of a proposed Climate Change Impact Assessment (CCIA) methodology has been developed in line with the 2020 IEMA guidance and IEMA's complementary report Assessing Greenhouse Gas Emissions and Evaluating their Significance. The Scottish Government carbon calculation tool will be used to calculate an approximation of the carbon footprint for the development and a reasonable assessment of the developments effects on identified environmental receptors will be made with reference to a list of climatic trends according to the most recent climate change projection iteration UKCP18.

The applicant should consider the release of stored soil carbon from peat soils resulting from this development and may also wish to include carbon retention resulting from habitat management if this can be reasonably measured.

Protected Landscapes

NED has the following comments to make on the potential impact of the proposed development on the Sperrin Area of Outstanding Natural Beauty (AONB). NED have some concerns regarding this proposal which are set out below in relation to the AONB.

The site lies within the Sperrin AONB and is therefore, in terms of policy, afforded a degree of protection which is defined in the following documents:

- The Regional Development Strategy (RDS) 2035
- Strategic Planning Policy Statement for Northern Ireland (SPPS)
- PPS18 Renewable Energy
- PPS18 SPG: Wind Energy Development In Northern Ireland's Landscapes: Supplementary Planning Guidance to accompany Planning Policy Statement 18 'Renewable Energy'
- PPS18 Best Practice Guide
- Derry Area Plan 2011 and Strabane Area Plan 2001 – *Both these plans will be superseded by the Derry City and Strabane District Council Local Development Plan 2032 once adopted.*
- Northern Ireland Regional Landscape Character Assessment
- PPS2 Natural Heritage Policy NH6

In section 6.9 of the scoping request, key questions were asked as part of this consultation, NED provide responses to these questions below:

Q6.1: Do consultees have any comments on the proposed methodology?

The applicant has indicated that they intend to follow the "Guidelines for Landscape and Visual Impact Assessment: Third Edition' (Landscape Institute and IEMA,2013)('GLVIA3')" and other publications for additional guidance as stated in section 6.3.1. These all seem appropriate for assessing the visual impact of the proposal on the landscape.

Q6.2: Are consultees in agreement with the proposed 30 km Study Area?

Yes, we are agreed on the 30km study area.

Natural Heritage and Conservation Areas

Q6.3: Are consultees in agreement that the assessment of the effects on landscape character receptors should focus on those LCAs which are highlighted as being relevant to the LVIA in Table 6.1?

Yes this would seem appropriate.

Q6.4: Are consultees in agreement that the assessment of the effects on landscape designations should focus on the Sperrin Mountains AONB?

NED are in agreement that the assessment of the landscape effects of this proposal should be focussed on the Sperrin AONB. To note the official name is “Sperrin AONB” there is no Mountains in the title of the AONB.

Q6.5: Do consultees have any comments or suggestions in relation to the Preliminary Representative Viewpoint Locations shown in Table 6.2 and illustrated on Figure 6.2?

It is in effect the responsibility of the applicant to make sure that the viewpoints are representative of the impact of the proposal on the landscape. However we would request that viewpoints should match those used for the previous applications on this site.

Q6.6: Do consultees have any comments on the acceptability of the proposed turbine tip height of 180 m?

In our opinion the increased blade height and increase in the numbers of turbines, after the decommissioning of Owenreagh I Wind Farm, may create an unacceptable impact on the AONB. The increased blade height from 111m to 180m adds significant height to the development which is of concern as the existing turbines rise above the skyline, this increased height will increase the visual impact of the windfarm in this part of the AONB.

Q6.7: Do consultees have any comments on the approach to assessing the effects of turbine lighting?

The proposed approach to provide visualisations of the possible impact of the turbine lighting is welcomed. The proposed approach does seem to provide some idea of the impact of the lighting in the night time landscape.

Q6.8: Do consultees have any comments or suggestions on the approach to cumulative landscape and visual assessment?

It is critical to recognise that wind energy development proposals can create significant cumulative impacts as a result of combined effects. It would be useful to see photomontages that should show how the surrounding established wind farms sit within the views of this proposal. While the map (figure 6.6 Cumulative Wind Farms) gives an indication of the surrounding wind farms, operational, under construction etc it would be useful to see if there is any substantial cumulative impact on for example the skyline when taken into consideration with this proposal.

Further Information

1. The DAERA website http://www.daera-ni.gov.uk includes:

    - Details of all regional, national and international designated sites in Northern Ireland

Natural Heritage and Conservation Areas

- Northern Ireland Biodiversity Strategy
- Northern Ireland Habitat and Species Action Plans
- Areas of Outstanding Natural Beauty
- Landscape Character Areas
- Environmental Legislation

2. NIEA have also produced an online GIS based map viewer showing the location of important natural environment areas including; NIEA protected areas and NIEA surveyed priority habitats and species which can be found here: https://www.daera-ni.gov.uk/services/natural-environment-map-viewer.

3. Useful information on planning and natural heritage, including Standing Advice and survey specifications, can be found on the DAERA website at https://www.daera-ni.gov.uk/topics/environmental-advice-planning.

4. NED recommends that all survey works comply with British Standard 42020:2013, which came into effect on 31 August 2013. The British Standard provides recommendations and guidance for those engaged in planning and development, whose work might affect or have implications for conservation, or the enhancement of biodiversity.

5. Information on the flora, fauna and geology of Northern Ireland can be obtained from the Habitas website: http://www.habitas.org.uk/.

6. Site specific environmental data (e.g. species records) can be obtained from the Centre for Environmental Data and Recording (CEDaR). These can be accessed by contacting CEDaR, National Museums NI, 153 Bangor Road, Cultra, Holywood, BT18 0EU. Website: http://www.nmni.com/cedar.

NED promotes the submission of biodiversity data to CEDaR, and recommends that species records generated as part of the EIA process are submitted to CEDaR by going to: https://www.nmni.com/CEDaR/CEDaR-submitting-records.aspx.

7. NED recommend the Supplementary Planning Guidance published by NIEA, *"Wind Energy Development in Northern Ireland's Landscapes"*, which provides broad, strategic guidance in relation to the visual and landscape impacts of wind energy development. The document can be downloaded from here: https://www.infrastructure-ni.gov.uk/publications/wind-energy-development-northern-ireland-landscapes.

General Scoping Guidance

Guidance on the scoping stage of Environmental Impact Assessment (EIA) and on the information to be included in an Environmental Statement (ES) is provided by the European Commission and can be found at: http://ec.europa.eu/environment/eia/eia-support.htm.

Natural Heritage and Conservation Areas

NED recommends *"Guidelines for Ecological Impact Assessment in the UK and Ireland"* produced by the Chartered Institute of Ecology and Environmental Management (CIEEM). This provides best practice guidance for assessing the ecological impact of projects and plans. The document can be downloaded from https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/.

NED would emphasise the following:

- The ES should describe both habitats and species of flora and fauna present. It should cover both the proposed site and the surrounding area. It should include any designated sites and protected species which may be affected.

- Proposals which may impact on a European site, however distant (i.e. Special Areas of Conservation and Special Protection Areas), will require a Habitats Regulations Assessment (HRA). Sufficient information must be provided to the competent authority to enable them to complete this.

- The topography, geology, soils and water environment of the site and surrounding area should be described.

- For sites that are hydrologically connected to a designated site, NED would advise that buffers are provided to watercourses on site in which there should be no infill, disturbance, construction activity or storage of materials. For upland sites this is recommended to be at least 50m.

- The ES should include a description of the likely significant effects, both positive and negative, at all stages of the development to include direct, indirect, secondary and cumulative effects in the short, medium and long term. A description of the forecasting methods used to predict these effects should also be included.

- A description of proposed measures to prevent, reduce or offset any significant adverse effects on the environment (i.e. Avoidance, Mitigation, Compensation, and Enhancement) must be included.

- An indication of any difficulties encountered during the EIA process, limitations of surveys and any uncertainties in the data must be included.

- The different chapters of the ES should be inter-related and the ecology chapter should be cross referenced where appropriate.

Flora and Fauna

- The ecological baseline of the site must be characterised. Following from this, the extent and nature of any further survey work that may be required should be identified. Surveys must cover flora and fauna present in all seasons.

- A habitat survey (i.e. JNCC Phase 1) should be carried out to map the habitats on site and identify areas which are likely to be of high nature conservation value or particularly vulnerable to impact from the proposed development. Areas thus identified should be subject to more

detailed survey, i.e. National Vegetation Classification (NVC). See http://jncc.defra.gov.uk/default.aspx?page=1425 for further information.

- If the Phase 1 Habitat Survey identifies a frequency of devil's-bit scabious *Succisa pratensis* within the site we may require further survey work to determine the presence of marsh fritillary butterfly *Euphydryas aurinia*.

- Faunal surveys should include a full breeding bird survey and protected species surveys. The timing of surveys is critical and they must be carried out at appropriate times of year.

- Surveys should highlight any Northern Ireland or European priority habitats and species which may be present on the site or surrounding area. This may include the argent and sable moth *Rheumaptera hastata,* whose food plant is bog myrtle *Myrica gale* and is therefore a species associated with peatland habitats.

- Baseline surveys conducted over a short period may not identify long term trends and reference should be made to previous records.

- Protected species surveys should be carried out to NED specifications. Note that these maybe updated in the light of new knowledge at any time. Therefore, it is advised to check the DAERA website for the most up to date specifications immediately prior to commencement of surveys.

- Full survey reports should be included in the appendix of the ES. All maps and diagrams should be of an appropriate scale for interpretation.

- NED reserve the right to determine whether the survey information submitted is adequate or when additional information is required.

- Survey information regarding species vulnerable to persecution should be included as a confidential annex to the ES, which should not be made publically available. The species of concern are badgers *(Meles meles),* freshwater pearl mussels *(Margaritifera margaritifera),* goshawks *(Accipiter gentilis),* hen harriers *(Circus cyaneus),* and peregrines *(Falco peregrinus).*

Bird Survey Requirements

It is appreciated that clear guidance is needed for developers at an early stage in the site planning and survey process so that there is an understanding of survey requirements.

We encourage all wind farm developers to consult us at an early stage to ensure a clear understanding of the survey work likely to be needed.

NED recommend the use of guidelines developed by NatureScot to determine the impact of wind farm developments on important bird populations. These bird survey guidelines are available from the NatureScot web site at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms.

The guidelines have been principally developed by NatureScot on the basis of raptor ecology and behaviour but also advise on other species, such as waterfowl. Given the considerable

similarities between key, at-risk species, in Northern Ireland and Scotland, we believe that the guidance is broadly applicable in its present form, while any future amendments will also be considered for use here. To date, most wind farm developers have recognised the validity of the guidance and, where appropriate, have used it to plan and execute their survey programme.

A distinction is made between those sites where existing data shows the presence of priority bird species (for example Hen Harrier, Merlin, Peregrine, breeding waders, especially Curlew, and wintering Whooper Swan) and sites where such species are believed to be absent. Where the evidence suggests that the site may be of significance for priority species, NED will advise that a comprehensive survey programme is undertaken. This will include surveys of breeding and wintering birds and vantage point observations of flight activity by raptors and other large species using the methodology derived from the NatureScot guidelines. This will generally entail two years pre-construction survey followed, should the development proceed, by a one year construction period survey and repeat surveys in years 1, 2, 3, 5, 10 and 15 post-construction.

Where existing data shows an absence of usage by priority species, or where data is lacking, NED will generally advise that a two year survey of bird populations of the area of the proposed site should be undertaken. This should include a more general breeding raptor survey of the surrounding area, to a distance of at least 2.5km, and standardised breeding and wintering bird surveys extending to 500m beyond the outermost turbines.

Depending on the findings of year one, the requirement for a further year's survey may be dispensed with.

Recent research has suggested that breeding Curlew may be particularly susceptible to disturbance from wind turbines at distances of up to 800m. At sites where Curlew is known or suspected to be present the breeding bird survey zone should be extended to 800m beyond the turbines. There is, however, no requirement to record species other than Curlew at distances between 500m and 800m.

Guidance on the estimation of collision risk from vantage point data is available at https://www.nature.scot/doc/wind-farm-impacts-birds-calculating-theoretical-collision-risk-assuming-no-avoiding-action.

NED also recommends that the developer liaises with the Northern Ireland Raptor Study Group - http://www.nirsg.com/. They can provide relevant advice and hold the most comprehensive dataset on birds of prey in Northern Ireland.

Bat Survey Requirements

Bats are a European Protected Species under the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended). Due to recent research highlighting the potential impacts to bats from wind turbines and the high legal protection afforded to bats, NED require bat surveys to be carried out on all proposed wind farm sites with the potential to host bats, which includes upland sites. Bat surveys should be conducted to NED bat survey specifications for wind farms (https://www.daera-ni.gov.uk/publications/niea-natural-environment-division-guidance-bat-surveys-assessment-and-mitigation-onshore-wind).

Natural Heritage and Conservation Areas

Water and Hydrology

- A description of the water environment of the area - running and static surface waters, groundwaters, estuaries, coastal waters and the sea, including run-off and drainage.

- A description of the hydrology, water quality and use of any water resources that may be affected by the development (e.g. water supply, fisheries, angling, bathing, amenity, navigation, effluent disposal).

- The consequences of changes to the hydro-geological system of the area on peatland, rivers, streams, flushes and wetland habitats should be described.

Geology

- A description of the geological resource of the site and surrounding area – this will be the hard rock geology for hard rock sites and the geomorphology in relation to landforms.

- An assessment of the significance of the geological features in a local and regional context.

- An assessment of how the development will impact on these features and on the wider geological feature if the development site forms part of a larger definable feature (especially relevant to landform complexes).

- A description of mitigation measures that may be relevant in retaining or redeveloping these geological features.

- Any opportunities to enhance the geodiversity of the area through creation / retention of rock outcrop or improve accessibility of geological features.

Mitigation Measures

A description of the measures proposed to prevent, reduce or offset any significant adverse effects on the environment caused by the development must be included in the ES. These measures can be summarised as:

- Avoidance: Priority should be given to avoiding negative impacts, especially those that could be significant. Consideration should be given to alternative strategies or locations, changes to the project design and layout, changes to methods and processes, changes to implementation plans and management practices including regulating the timing of activities.

- Mitigation: Opportunities should be sought, wherever possible, to reduce negative impacts on the environment, ideally to the point where they are no longer significant.

- Compensation: Where avoidance or mitigation of negative impacts is not practicable measures to compensate for impacts should be proposed.

- Enhancement: Opportunities should be sought in every new development to deliver net

ecological gain rather than just limiting environmental damage. Enhancement measures may lead to an increase in the biodiversity of a site.

Mitigation measures should be incorporated into the design of a project from the outset and included on plans and drawings where appropriate. Mitigation which simply comprises a list of recommendations will generally not be acceptable.

Other recommendations include:

- A description of the criteria used to establish the magnitude and significance of environmental impacts. A tabular presentation should be used to summarise key direct and indirect impacts.

- The mitigation proposed should be clearly described and its effect on the magnitude and significance of these impacts should be assessed and clearly explained.

- Any uncertainty in the effectiveness of proposed mitigation measures should be explained and, where appropriate, evidence should be provided of successes from other similar projects.

- The implementation of proposed mitigation should be clearly described and, if necessary, arrangements for monitoring the implementation and success of mitigation measures should be stated.

Construction and Environmental Management Plan

A Construction and Environmental Management Plan (CEMP) should be produced to detail the construction phase of the project and the implementation of the mitigation measures described in the ES. It will provide the management framework for the planning and implementation of construction activities and describe how working practices will avoid or minimise impacts to the environment at all stages of the development. It should provide details of procedures for monitoring and reporting the environmental effects of the development during construction. It should include the following information:

- Pre construction site conditions should be described to establish a baseline against which construction effects can be assessed.

- A site plan to show the location of construction activities, access routes, the storage of materials, the position of plant and the location of any sensitive receptors (e.g. trees, peat, watercourses).

- A detailed programme of the work to be carried out including timing and sequencing of works.

- Methods of construction and working practices should be specified, including equipment and materials to be used.

- Details of how mitigation measures will be implemented should be clearly stated.

- Details of procedures for monitoring and reporting the environmental effects of the development during construction and in the operation phase.

Habitat Management Plan

A Habitat Management Plan (HMP) should form part of the ES. This should show how the habitats, flora and fauna of the site will be protected during and after construction. It should include a long-term plan for the management of the site for nature conservation and, if appropriate, show details of compensation or enhancement measures such as habitat restoration and creation.

Habitat restoration and creation measures must be carefully considered, and a rationale provided for the choice of measures. Techniques for habitat restoration and creation must be detailed, site specific and follow current best practice. Evidence should be provided which shows that the proposed measures have a reasonable likelihood of success. If proposed techniques are unproven, then a more detailed description and rationale for their use will be required. Proposed measures must have clearly defined criteria for success so that they can be adequately measured and monitored.

The HMP should include a long-term monitoring plan, detailing how the ecology of the site will be monitored to demonstrate the success of any proposed mitigation, compensation, or enhancement measures. The monitoring plan must span an appropriate time frame depending on the type of development, the habitats and/or species being monitored, and the likely timescales of any habitat restoration or creation measures. The monitoring plan must include measurable targets and details of contingency measures should monitoring reveal unfavourable results. Consideration must be given to the long-term ecology of the site at the end of the lifetime of the development. For example, it may not be appropriate to leave infrastructure, such as access tracks, in place where sensitive habitats are present when this could lead to the long-term degradation of these habitats. Issues such as these must be adequately addressed within an appropriate Decommissioning and Restoration Plan.

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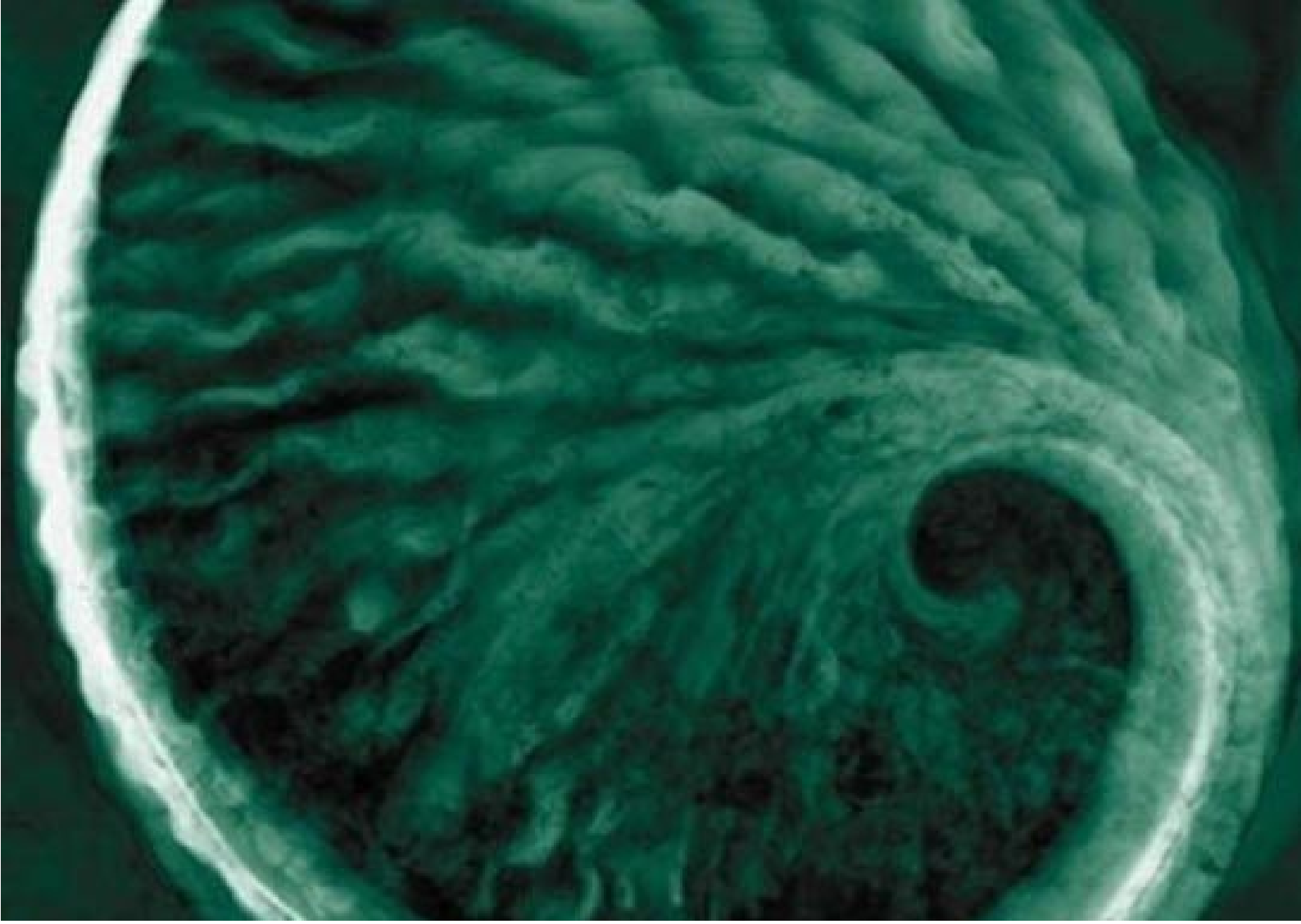

Owenreagh/Craignagapple Wind Farm

Ørsted Onshore Ireland Midco Limited

Environmental Statement - Technical Appendix A2.3 Abnormal Load Route Works

06 September 2023

Project No.: 0696177

The business of sustainability

ERM

Signature Page

06 September 2023

Owenreagh/Craignagapple Wind Farm

Environmental Statement - Technical Appendix A2.3 Abnormal Load Route Works

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CONTENTS

List of Tables

Acronyms and Abbreviations

Name	Description
ALRA-ES	Technical Appendix A13.1: Abnormal Loads Route Assessment
ALR	Abnormal Load Route
ALRW	Abnormal Load Route Works
EIA	Environmental Impact Assessment
EcIA	Ecological Impact Assessment
ES	Environmental Statement
HGVs	Heavy Goods Vehicles

1. INTRODUCTION

1.1 Overview

This document reviews the potential environmental effects of the physical works required along the delivery route for the proposed Owenreagh/Craignagapple Wind Farm (referred to as the Development). Conclusions are drawn on whether these effects, either individually, when taken together, or together with the Development, are potentially significant, in terms of the Environmental Impact Assessment (EIA) Regulations. This informs the scope of the technical assessments carried out and reported in Chapters 6-15 of the Environmental Statement (ES) for the Development.

The detail of these abnormal load route works (ALRW) was not known at the time of EIA Scoping, and hence their inclusion or exclusion from assessment in the ES was not covered in the Scoping Request (**Technical Appendix A2.1**) or Scoping Opinion (**Technical Appendix A2.2**). In order to ensure the EIA is proportionate and focuses only on the potentially significant effects (and other aspects required by the Scoping Opinion), this document acts as a sieving process, identifying which potential effects associated with the works should be included in the EIA, and explaining why any other works can be scoped out of the EIA.

This review forms **Technical Appendix A2.3: Abnormal Load Route Works** to the ES **Chapter 2: Methodology**, for the Development.

1.2 Project Description

Ørsted Onshore Ireland Midco (the Applicant) proposes the construction and operation of the Development, which includes (amongst other things; see **Chapter 3: Development Description** for a full description):

- Decommissioning of the operational Owenreagh I and II Wind Farms; and
- Repowering of the Owenreagh I and II sites and consented Craignagapple site through construction of 14 wind turbines with tip height up to 156.5 m and rotor diameter up to 136 m; and
- Associated ancillary infrastructure, including but not limited to the following:
  - Substation compound including control building and other electrical infrastructure;
  - New and upgraded access tracks including turning heads;
  - Crane hardstands;
  - Construction compounds; and,
  - Cable trenches.

These works require wind farm components, plant, materials and personnel to be brought to the Development site, and decommissioned turbine components, plant and personnel be taken away from the site.

1.3 Delivery Route Works

A transport assessment, including an Abnormal Loads Route Assessment (ALRA), is reported in ES **Chapter 13: Traffic and Transport**, together with its technical appendices. These report the preferred delivery route to and from the Development site, which is shown in ES Figure 13.1.

Various works are required at specific points along this route, falling into two categories:

- Works to enable the safe passage of large turbine components (blades and tower sections) as described in **Technical Appendix A13.1: Abnormal Load Route Assessment** (ALRA); and,
- Passing places, to enable Heavy Goods Vehicles (HGVs) to pass other vehicles on the road.

There are 25 points where works are required along the Abnormal Load Route (ALR), labelled PC/1 through PC/25, as shown in Figure A13.1.1 within the ALRA. These are listed and described in Tables A13.1.5 and A13.1.6 of the ALRA.

There are 52 passing places proposed along the delivery route, as shown in **Technical Appendix A13.5: Passing Bay Design**.

1.4 Works Scoped Out of Review

Delivery route works vary in extent, and only those with at least localised environmental effects are worth considering in this review. Works along the ALRA that require only "oversail" of land, temporary removal of street furniture, walls, or fences, and/or "cutting back" of vegetation do not have the potential to lead to or contribute to significant environmental effects and are not considered further in Section 2 below.

In environmental assessment terms, there is no distinction between works within the adopted highway boundary and works on private land outside the adopted highway boundary, therefore no reference is made to land ownership in this review.

2. DESCRIPTION OF THE WORKS

Works that are scoped into the review are summarised in Table A2.3.1. Note that some of these locations have more than one set of works required, identified as (B), (C). Some of these locations have an alternative solution, only one of which would be implemented, with the alternative identified as 'option 2'.

Table A2.3.1. Delivery Route Works Include in this Review

Works number/ identifier	Location	Description (excluding street furniture works)
PC/11 option 2	A5 / Woodend Road Junction, Ballymagory	Trees to be felled.
PC/13 option 1	Woodend Road/ Berryhill Road Junction, Ballymagory	Overrun area to be constructed to the south of the junction. Significant earthworks likely to be required to provide level area for vehicle.
PC/13 option 2	Woodend Road/ Berryhill Road Junction, Ballymagory	Overrun area to be constructed on the inside of bend, this will require the removal of trees, wall, signposts and lighting column.
PC/14	Berryhill Road/ Pine Road Junction, near Ballymagory	Overrun areas to be constructed as indicated on Drawing 4172_ALRA_0014. Earthworks may be required to level overrun areas.
PC/14 (C)	Berryhill Road / Off Site Access Track / Sentry Road	Construction of off site access track
PC/15	Bend at Farmyard, Sentry Road	Overrun area to be constructed within field as indicated on drawing 4172_ALRA_0015.
PC/16	Bend at 10 Sentry Road	Telegraph posts to be relocated, hedges and trees removed.
PC/17	Bend beyond 3 Sentry Road	Overrun area to be constructed, wall and fence to be relocated behind overrun area.
PC/18	Bends beyond Art Road, Sentry Road	Trees and hedges to be trimmed/removed as necessary, including a mature tree within the garden of the property at 30 Sentry Road
PC/18 option 2	Bends beyond Art Road, Sentry Road	Overrun area to be constructed within field to the west of Sentry Road. Trees to be felled on land to the south of junction.

Works number/ identifier	Location	Description (excluding street furniture works)
PC/18 (B)	Art Road/ Sentry Road – Junction	Trees to be removed from oversail areas.
PC/19	Bends at 33 Moorlough Road	Overrun area to be constructed within field. Fence and hedge to be removed from edge of road.
PC/20	Bends at 45 Moorlough Road	Overrun areas to be constructed as shown on drawing 4172_ALRA_0020. Trees to be removed as required.
PC/20 option 2	Bends at 45 Moorlough Road	Overrun area for rear of vehicles to be constructed to the north of 35 Moorlough Road. Trees to be felled. On subsequent bend, trees to be removed.
PC/21	Bends on Moorlough road before Glenmornan Road	Trees to be removed.
PC/22	Moorlough Road/ Glenmornan Road Junction	Trees to be removed.
PC/22 option 2	Moorlough Road/ Glenmornan Road Junction	Hedge to be relocated behind overrun area.
PC/23	Bends on Glenmornan Road	Trees and hedge to be removed.
PC/24	Glenmornan Road/ Hollyhill Road Crossroad	Trees and hedge to be removed.
PC/24 option 2	Glenmornan Road/ Hollyhill Road Crossroad	Temporary overrun areas to constructed on the southwest boundary of the road. Hedges to be removed.

Passing places will also be constructed as part of this development. Works that are scoped into the review are summarised in Table A2.3.2.

Table A2.3.2. Passing Places

Works number/ identifier	Location	Description (excluding street furniture works)
PB 4	Sentry Road	Removal of hedges.
PB 5	Bend on Sentry Road	Removal of hedges and relocation of fence.
PB 7	Four-way junction on Sentry Road	Removal of hedges.
PB 10	Moorlough Road	Potential removal of trees. Relocation of fence.
PB 11	Moorlough Road	Removal of trees.

PB 12	Moorlough Road	Removal of hedges and relocation of fences.
PB 13	Glenmornan Road	Removal of tree and relocation of fencing.
PB 14	Glenmornan Road	Removal of hedges.
PB 15	Glenmornan Road	Removal of hedges and tree. Relocation of fencing.
PB 16	Glenmornan Road	Relocation of fencing and removal of hedging.
PB 17	Glenmornan Road	Relocation of fencing and removal of hedging.
PB 18	Glenmornan Road	Relocation of fencing and removal of hedging.
PB 19	Glenmornan Road	Relocation of fencing and removal of hedging. Possible removal of trees
PB 21	Glenmornan Road	Removal of multiple trees, hedges, and relocation of fencing.
PB 22	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 23	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 24	Glenmornan road	Removal of hedges and relocation of fencing.
PB 25	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 26	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 27	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 28	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 29	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 30	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 31	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 32	Glenmornan Road	Removal of hedges and relocation of fencing.
PB 36	Glenmornan Road	Removal of tree and relocation of fencing.
PB 38	Glenmornan Road	Relocation of fencing. Potential removal of bushes
PB 39	Glenmornan Road	Relocation of fencing. Potential removal of bushes

3. ASSESSMENT OF INDIVIDUAL LOCATIONS

The potential for significant environmental effects is considered below for the different types of work set out in Section 2.

3.1 Potential Ecological Effects

The works detailed in Section 2 will result in the removal of trees and hedgerows. This will likely result in ecological effects which are assessed in more detail in **Appendix IV** of **Technical Appendix A10.1: Ecological Impact Assessment (EcIA)**. The assessment of the ecological effects of these works concluded that they would be **not significant** after the implementation of mitigation measures. Proposed mitigation measures include, but are not limited to:

- Replacement of removed hedgerows with native species rich plant assemblage;
- Endoscope surveys by the ECoW prior to tree felling;
- Replacement of felled trees with native species;
- Invasive/non-native species survey in the year prior to construction and use of chemical control to ensure the avoidance of identified invasive species from spreading; and
- Potential Roost Features (PRF) survey of the non-designated heritage assets adjacent to the off-road section of the ALR (refer to Section 3.3 in this document for further information).

3.2 Landscape Effects

The removal of short sections of hedgerows and trees has the potential to result in localised Landscape and Visual effects. These changes would be experienced by road users. These receptors would be passing through and the changes would be limited in their duration for any given road user.

Where works are carried out near to residences the effects experienced as a result of removal of trees and hedges rows has the potential to be greater. However, given that these areas are localised, and where they are needed they are done with the permission of the landowner, the effects of these works are limited and are assessed as **not significant**.

3.3 Potential Cultural Heritage Effects

The potential for cultural heritage effects along the ALR are limited to the off-road section of the ALR that runs from the B49 Berryhill Road, east across agricultural land, crossing Pine Road and continuing along Sentry Road. Significant earth works are anticipated to occur along this proposed portion of the ALRW that could potentially affect known and unknown cultural heritage receptors. As all other works proposed to be carried out along the remaining sections of the ALR are directly adjacent to the existing road carriageway and are small-scale in nature, no significant effects to cultural heritage receptors are anticipated at these areas of the ALR.

To assess the potential for direct effects to known and unknown cultural heritage receptors in the vicinity of the off-road section of the ALR, a desk-based assessment (DBA) and accompanying walkover survey were conducted. A 0.5 km Core Study Area (CSA) and a wider 1 km Study Area was evaluated for the purposes of this assessment. The DBA did not identify any designated assets within the CSA and one designated asset was identified within the Study Area, which was classified as a Rath/Ringfort dating to the early Christian period (Reference TYR005:005). The walkover within the CSA subsequently identified one potential cultural heritage asset, consisting of a likely Post-Medieval farmstead with 19th century additions. The walkover survey also noted areas of wetland which appear to be sited along the route of a relict stream system. Such areas can be sites of transient prehistoric activity; however, the potential for unknown cultural heritage assets was determined to be low within the CSA and wider Study Area.

Although the Post-Medieval/19th Century farm buildings fall within 100 m of the groundworks associated with construction activities for the off-road section of the ALR, direct effects will be avoided and an archaeological clerk of works will be present during the construction works to mitigate any potential direct effects to the Post-Medieval/19th Century farm buildings, as outlined in **Technical Appendix 3.1: Outline Decommissioning/Construction Environmental Management Plan (oDCEMP),** Section 4.15. As the ALRW will be temporary in nature and the lands affected will be

reinstated following construction, indirect effects to potential cultural heritage receptors are unlikely to occur. Therefore, **no significant** effects are expected on cultural heritage receptors.

3.4 Potential Geology and Soils Effects

As all works are proposed to be carried out directly adjacent to the existing road carriageway and are small-scale in nature, geological and soils effects will be minimal and **not significant**.

3.5 Potential Hydrology Effects

Earth works associated with the ALRW have the potential to generate pollution and sediment laden runoff that could potentially affect surrounding hydrological receptors in the immediate vicinity of the ALR. These works will be temporary and spatially restricted to small areas along the ALR, with the detailed design accounting for the drainage features of the ALRW. To mitigate potential effects to hydrological receptors along the ALR, all ALRW will be carried in accordance with **Technical Appendix 3.1: oDCEMP,** Sections 4.7, 6, and 8. With the implementation of these mitigation measures, there will be **no significant** effects on hydrological receptors associated with the ALRW.

3.6 Potential Effects on Existing Infrastructure

As these works will be undertaken at the edges of roadways, there is a likelihood of encountering utilities, both above surface (telephone poles etc.) and subsurface. Best practice safety and mitigation measures for avoiding these utilities will be followed in accordance with **Technical Appendix A3.1: oDCEMP**. With the implementation of these best practice measures, there will be **no significant** effects on utilities.

3.7 Potential Socioeconomics, Tourism, and Recreation Effects

Only one of the Socioeconomics, Tourism, and Recreation receptors identified in **Chapter 14: Land Use, Socio-economics, Tourism and Recreation** lies along the ALR. This recreational receptor is the Ballyskeagh Stables, which is located on Moorlough Road and is a British Horse Society (BHS) approved riding school. As detailed in **Chapter 14: Land Use, Socio-economics, Tourism and Recreation**, the Ballyskeagh Stables is considered important at the Derry City and Strabane District Council level and is considered to be a receptor of low sensitivity. Works that will occur in the vicinity of this receptor are Passing Bay PB 11 and the overrun and oversail areas detailed in P/C 21. These works will result in the removal of trees, hedges and relocation of fencing along the boundary of the property.

The effects of these works upon Ballyskeagh Stables are likely to be limited due to the short-term nature of the construction works required to carry them out and due to the low sensitivity of the receptor. The minor changes to the road layout and vegetation bordering the property will not substantially affect the recreation amenity of the receptor (i.e. horse riding and use of the stable facilities). As such, there will be **no significant** effects to this receptor under EIA regulations.

4. GROUPED ASSESSMENT

The individual effects of these works must be considered in combination each other to robustly assess their impact upon receptors. Each of the effects detailed in Section 3 has been assessed to result in **no significant** effects in terms of EIA Regulations. Where effects are present they will be temporary, or with the application of best practice guidance mitigated substantially.

Change to landscape and the experience of drivers on the route will occur due to the removal of hedges and tree felling (refer to **Technical Appendix 10.1: EcIA**). The route is a short section (~11.5 km) of minor road, and the works are intermittent on this route. The construction phase will be similar to a road resurfacing programme, and once complete the changes will be an improved driving experience but with reduced levels of vegetation alongside the road. Given the overall scale of the road and number of similar roads in the area, this is not a significant effect; therefore, when grouped together it is assessed that the overall effect of the works will result in **no significant** effects.

5. CUMULATIVE ASSESSMENT

The effects of the works detailed in this technical appendix must also be considered cumulatively with the overall works that will be required as part of the Development and works required by cumulative developments other than the Development, including those set out in **Technical Appendix A2.4: Cumulative Developments**.

As the works detailed in this chapter are required to improve the local road network to allow the transport of abnormal loads, all works will be completed prior to the initial decommissioning and construction phase of the Development. Therefore, while these works will not be concurrent, they will result in an effective extension of the construction phase of the Development for people using the route and/or living along the route. They will also add to the effects of the other cumulative developments. These receptors will be local to the works, but not to the main Development site or to the other cumulative developments, so the potential for cumulative effects on these receptors is very low, and **not significant**.

6. SUMMARY

For the construction of the Development works will need to be undertaken including construction of passing places and removal of vegetation to allow the passage of Abnormal Load Vehicles.

The assessment of these works and their potential environmental effects presented in this technical appendix concludes that there will be **no significant effects** arising from these works, either individually, as a group or cumulatively with the other construction activities required for the Development and other cumulative developments. As a result, the potential effects of carrying out these works is scoped out of the main assessments reported in the technical chapters (6 to 15) of this ES.

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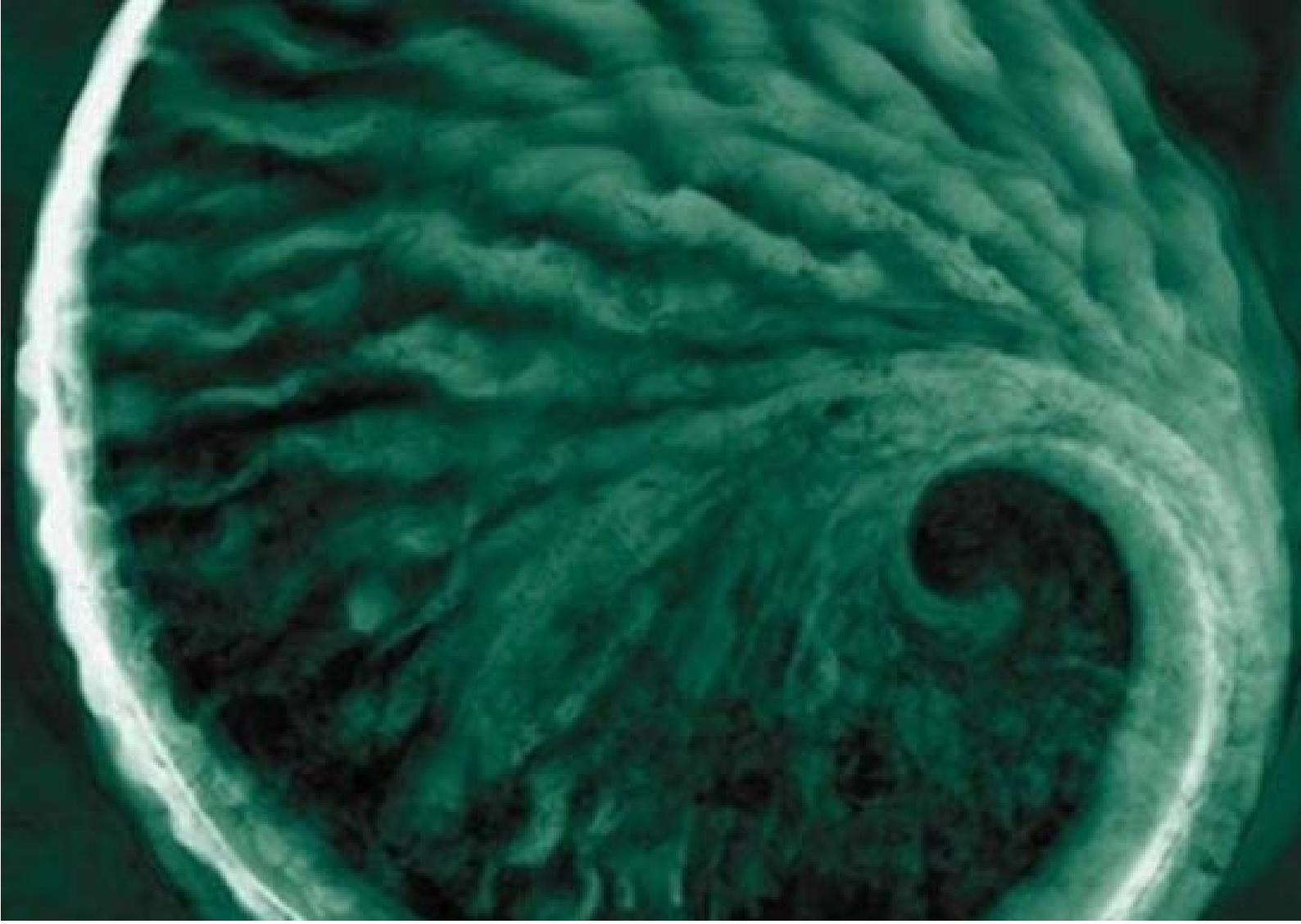

Owenreagh/Craignagapple Wind Farm

Ørsted Onshore Ireland Midco Limited

Environmental Statement- Technical Appendix A2.4 Cumulative Developments

06 September 2023

Project No.: 0696177

The business of sustainability

ERM

Signature Page

06 September 2023

Owenreagh/Craignagapple Wind Farm

Environmental Statement- Technical Appendix A2.4 Cumulative Developments

Ian Grant
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Consultant

Environmental Resources Management Ireland Limited

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Ireland

1. CUMULATIVE DEVELOPMENTS

Site Name	Status	No. turbines	Developer	Planning Application	Local Authority	Northings	Eastings	Distance (m)	Hub Height (m)	Blade Tip (m)	Aviation Lights
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	914104	662384	25162.25	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913043	661185	23561.08	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912853	661301	23518.94	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913254	661447	23896.71	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913051	661534	23824.51	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913897	662249	24922.98	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913441	661698	24208.03	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913720	662045	24653.04	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912609	661424	23444.45	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912562	661660	23587.2	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912344	661773	23526.07	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912621	661914	23815.49	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912359	662023	23724.39	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912817	661648	23750.06	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912539	662198	23974.56	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912837	662080	24083.95	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	912989	662837	24751.73	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913329	662543	24757.08	49	80	Yes

Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913161	661923	24185.31	49	80	Yes
Altahullion I	Operational	20	RES	B/2000/0118/F	Londonderry	913113	662225	24376.41	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	912739	662402	24259.74	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	912988	662521	24513.55	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	913681	662371	24867.96	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	913420	662106	24496.25	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	913689	662764	25162.51	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	912251	662267	23838.23	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	912094	662051	23572.12	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	913285	662837	24946.93	49	80	Yes
Altahullion II	Operational	9	RES	B/2004/0795/F	Londonderry	912725	662689	24467.09	49	80	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	907603	260918	19962.7	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	907522	261212	20166.65	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	907156	261072	19854.16	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	907062	261325	20021.44	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	906417	261473	19825.98	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	906611	261451	19902.2	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	906886	261630	20194.5	85	126	Yes
Ballyhanedin	Consented	8	Gaelectric	A/2014/0630/F	Londonderry	906331	261671	19957.61	85	126	Yes
Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911201	254376	17602.04	80	125	Yes
Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911582	254361	17899.88	80	125	Yes

Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911373	254718	17945.3	80	125	Yes
Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911703	254912	18325.38	80	125	Yes
Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911198	255065	18020.45	80	125	Yes
Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911455	255335	18389.72	80	125	Yes
Barr Cregg	Consented	7	RES	A/2012/0401/F; 2015/A0102	Londonderry	911823	255340	18681.47	80	125	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	915180	662320	25855.6	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914861	662246	25580.3	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914852	662585	25819.1	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	915077	662922	26218.5	68	115	Yes

Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914754	663033	26079.72	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914559	661989	25185.05	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914440	662280	25314.62	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914330	662643	25505.81	68	115	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914128	661993	24891.19	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	914066	661693	24630.54	60	100	Yes

Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	913750	661510	24280.5	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	913582	661212	23948.61	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	913440	660925	23642.92	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	912985	660766	23214.66	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	912595	661096	23194.05	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	911778	662121	23421.27	60	100	Yes

Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	911953	662395	23743.68	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	912159	662674	24089.82	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	912400	662864	24390.05	60	100	Yes
Glenconway	Operational	20	Arcus Renewable Energy Consulting Ltd	B/2011/0080/F B/2011/0223/F B/2010/0448	Londonderry	912436	662538	24164.36	60	100	Yes
Monnaboy	Operational	4	Gaelectric Developments	A/2009/0868/F	Londonderry	915209	657530	22703.28	80	121	Yes
Monnaboy	Operational	4	Gaelectric Developments	A/2009/0868/F	Londonderry	915526	657195	22758.1	80	121	Yes
Monnaboy	Operational	4	Gaelectric Developments	A/2009/0868/F	Londonderry	915563	656837	22580.92	80	121	Yes

Monnaboy	Operational	4	Gaelectric Developments	A/2009/0868/F	Londonderry	915275	656832	22343.04	80	121	Yes
Altgolan	Application	5	Altgolan Windfarm Ltd	LA11/2022/0895/F	Derry City and Strabane	875233	620435	30034.2	0	150	Yes
Altgolan	Application	5	Altgolan Windfarm Ltd	LA11/2022/0895/F	Derry City and Strabane	875091	620697	29951.89	0	150	Yes
Altgolan	Application	5	Altgolan Windfarm Ltd	LA11/2022/0895/F	Derry City and Strabane	875295	620893	29668.35	0	150	Yes
Altgolan	Application	5	Altgolan Windfarm Ltd	LA11/2022/0895/F	Derry City and Strabane	875295	620981	29606.89	0	150	Yes
Altgolan	Application	5	Altgolan Windfarm Ltd	LA11/2022/0895/F	Derry City and Strabane	875597	621210	29230.89	0	150	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881015	638138	15701.53	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881066	638017	15686.41	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881743	638570	14884.18	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881611	638491	15032.31	40.25	59.75	Yes

Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881458	638406	15202.41	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881330	638306	15352.6	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881174	638249	15518.21	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881459	638203	15256.94	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881370	638062	15382.2	40.25	59.75	Yes
Bessy Bell I	Operational	10	SSE Renewables		Tyrone	881242	637968	15531.85	40.25	59.75	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	877233	626295	24633.82	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	877039	625894	25036.03	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	876962	625518	25333.48	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	876806	625146	25691.15	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	876831	624725	25944.42	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	876954	624337	26106.76	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	877093	623994	26232.29	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	876876	623557	26687.98	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	876502	623510	26995.7	65	109.5	Yes

Binnawooda	Application	15	Unknown	Unknown	Tyrone	876107	623359	27390.12	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	875915	623013	27764.25	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	875521	622853	28164.05	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	875200	622549	28605.89	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	874677	622475	29046.91	65	109.5	Yes
Binnawooda	Application	15	Unknown	Unknown	Tyrone	874294	622490	29325.95	65	109.5	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	875867	626856	25385.6	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	875491	626578	25853.05	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	875190	626613	26078.05	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	874825	626859	26237.81	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	874825	626859	26237.81	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	874387	626224	26959.51	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	874576	626535	26627.1	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	874384	626921	26569.69	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	873868	626374	27302.67	80	127	Yes
Castlecraig	Operational	10	RES / NTR	K/2006/1934/F	Tyrone	873811	626826	27100.3	80	127	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	879274	617875	29353.74	61.4	100	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	878887	617862	29592.77	61.4	100	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	878510	617774	29888.92	61.4	100	Yes

Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	878289	618110	29756.42	61.4	100	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	878116	617746	30149.58	61.4	100	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	878048	618414	29665.4	61.4	100	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	877745	618163	30050.7	61.4	100	Yes
Church Hill	Operational	8	Energia Renewables	J/2005/0358/F	Tyrone	877656	618589	29775.07	61.4	100	Yes
Clunahill	Under Construction	6	Unknown	Unknown	Tyrone	871854	628957	27720.88	60	100	Yes
Clunahill	Under Construction	6	Unknown	Unknown	Tyrone	871832	629279	27594.74	60	100	Yes
Clunahill	Under Construction	6	Unknown	Unknown	Tyrone	871813	629744	27406.77	60	100	Yes
Clunahill	Under Construction	6	Unknown	Unknown	Tyrone	871503	628696	28152.4	60	100	Yes
Clunahill	Under Construction	6	Unknown	Unknown	Tyrone	871541	629086	27941.33	60	100	Yes
Clunahill	Under Construction	6	Unknown	Unknown	Tyrone	871477	629413	27853.46	60	100	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869109	631464	29155.37	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869037	631733	29121.84	85	120.5	Yes

Dooish	Consented	10	Unknown	Unknown	Tyrone	868874	632050	29158.66	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869159	632052	28891.99	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869322	631822	28824.17	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869419	631582	28823.84	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869448	631263	28919.06	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869158	631125	29239.81	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869302	630745	29257.31	85	120.5	Yes
Dooish	Consented	10	Unknown	Unknown	Tyrone	869562	630929	28945.5	85	120.5	Yes
Gronan	Consented	4	DW Consultancy	J/2007/0667/F	Tyrone	876871	617598	31039.57	85	125	Yes
Gronan	Consented	4	DW Consultancy	J/2007/0667/F	Tyrone	877065	617791	30767.44	85	125	Yes
Gronan	Consented	4	DW Consultancy	J/2007/0667/F	Tyrone	877398	617906	30468.54	85	125	Yes
Gronan	Consented	4	DW Consultancy	J/2007/0667/F	Tyrone	877698	617871	30308.8	85	125	Yes
Seegronan	Operational	6	Seegronan Windfarm	J/2006/0883/F	Tyrone	877989	619080	29184.77	70	110	Yes
Seegronan	Operational	6	Seegronan Windfarm	J/2006/0883/F	Tyrone	877682	619308	29205.44	70	110	Yes
Seegronan	Operational	6	Seegronan Windfarm	J/2006/0883/F	Tyrone	877525	618988	29551.48	70	110	Yes

Seegronan	Operational	6	Seegronan Windfarm	J/2006/0883/F	Tyrone	877358	619306	29416.62	70	110	Yes
Seegronan	Operational	6	Seegronan Windfarm	J/2006/0883/F	Tyrone	877135	619001	29793.37	70	110	Yes
Seegronan	Operational	6	Seegronan Windfarm	J/2006/0883/F	Tyrone	876904	619065	29895.87	70	110	Yes
Slieveglass	Operational	3	Slieveglass wind farm (Energia)	J/2008/0088	Tyrone	877614	627477	23609.71	64	99.5	Yes
Slieveglass	Operational	3	Slieveglass wind farm (Energia)	J/2008/0088	Tyrone	877316	627478	23848.16	64	99.5	Yes
Slieveglass	Operational	3	Slieveglass wind farm (Energia)	J/2008/0088	Tyrone	877481	627769	23543.06	64	99.5	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868823	628385	30691.02	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868783	628707	30589.17	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868700	629022	30528.26	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868429	629430	30595.71	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868288	629607	30648.62	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	869047	629072	30194.97	52.5	88	Yes

Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868883	629415	30192.18	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868643	629708	30284.14	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868108	629730	30760.95	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	867922	629833	30888.05	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	867616	629188	31434.4	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	867714	629527	31203.55	52.5	88	Yes
Tappaghan Mountain	Operational	13	Unknown	Unknown	Tyrone	868574	629249	30542.5	52.5	88	Yes
Thornog	Operational	4	Unknown	Unknown	Tyrone	870977	624226	30900.22	64	99.5	Yes
Thornog	Operational	4	Unknown	Unknown	Tyrone	871345	624247	30585.04	64	99.5	Yes
Thornog	Operational	4	Unknown	Unknown	Tyrone	871213	624465	30570.71	64	99.5	Yes
Thornog	Operational	4	Unknown	Unknown	Tyrone	871443	624723	30235.69	64	99.5	Yes
Thornog Extension	Operational	4	Unknown	Unknown	Tyrone	870609	624031	31314.05	64	99.5	Yes
Thornog Extension	Operational	4	Unknown	Unknown	Tyrone	870197	624421	31440.3	64	99.5	Yes
Thornog Extension	Operational	4	Unknown	Unknown	Tyrone	869972	624657	31501.78	64	99.5	Yes
Thornog Extension	Operational	4	Unknown	Unknown	Tyrone	869811	624946	31483.32	64	99.5	Yes

Tappaghan Mountain Extension	Operational	6	Unknown	Unknown	Tyrone	868189	628128	31373.72	64.5	100	Yes
Tappaghan Mountain Extension	Operational	6	Unknown	Unknown	Tyrone	868091	628332	31375.12	64.5	100	Yes
Tappaghan Mountain Extension	Operational	6	Unknown	Unknown	Tyrone	868437	628485	30996.55	64.5	100	Yes
Tappaghan Mountain Extension	Operational	6	Unknown	Unknown	Tyrone	868519	628206	31042.45	64.5	100	Yes
Tappaghan Mountain Extension	Operational	6	Unknown	Unknown	Tyrone	868346	627880	31340.19	64.5	100	Yes
Tappaghan Mountain Extension	Operational	6	Unknown	Unknown	Tyrone	868344	628906	30898.92	64.5	100	Yes
Lough Hill Resubmission	Operational	7	Unknown	Unknown	Tyrone	875606	625065	26672.4	50	80	Yes
Lough Hill Resubmission	Operational	7	Unknown	Unknown	Tyrone	875637	624746	26847.66	50	80	Yes
Lough Hill Resubmission	Operational	7	Unknown	Unknown	Tyrone	875886	624756	26648.29	50	80	Yes
Lough Hill Resubmission	Operational	7	Unknown	Unknown	Tyrone	875863	625014	26503.53	50	80	Yes
Lough Hill Resubmission	Operational	7	Unknown	Unknown	Tyrone	875754	625300	26410.63	50	80	Yes
Lough Hill Resubmission	Operational	7	Unknown	Unknown	Tyrone	875713	625529	26301.99	50	80	Yes

Bin Mountain	Operational	6	Greencoat UK Wind	J/2004/0295/F	Tyrone	876307	624159	26710.73	55	90.25	Yes
Bin Mountain	Operational	6	Greencoat UK Wind	J/2004/0295/F	Tyrone	876226	624479	26564.23	55	90.25	Yes
Bin Mountain	Operational	6	Greencoat UK Wind	J/2004/0295/F	Tyrone	876279	624801	26316.67	55	90.25	Yes
Bin Mountain	Operational	6	Greencoat UK Wind	J/2004/0295/F	Tyrone	876304	625133	26086.17	55	90.25	Yes
Bin Mountain	Operational	6	Greencoat UK Wind	J/2004/0295/F	Tyrone	876354	625465	25838.41	55	90.25	Yes
Bin Mountain	Operational	6	Greencoat UK Wind	J/2004/0295/F	Tyrone	876377	625773	25628.71	55	90.25	Yes
Bessy Bell II	Operational	6	SSE Renewables	K/2013/0145/F	Tyrone	881420	639233	15040.06	46	76	Yes
Bessy Bell II	Operational	6	SSE Renewables	K/2013/0145/F	Tyrone	881746	639606	14639.29	46	76	Yes
Bessy Bell II	Operational	6	SSE Renewables	K/2013/0145/F	Tyrone	881625	639827	14702.85	46	76	Yes
Bessy Bell II	Operational	6	SSE Renewables	K/2013/0145/F	Tyrone	881470	640068	14799.25	46	76	Yes
Bessy Bell II	Operational	6	SSE Renewables	K/2013/0145/F	Tyrone	881271	639676	15082.58	46	76	Yes
Bessy Bell II	Operational	6	SSE Renewables	K/2013/0145/F	Tyrone	881054	639819	15260.22	46	76	Yes

Eglish Mountain	Operational	6	ESB (Northern Wind Power)	A/2005/0223/F	Londonderry	905850	649629	10493.28	0	107	Yes
Eglish Mountain	Operational	6	ESB (Northern Wind Power)	A/2005/0223/F	Londonderry	905490	649790	10287.38	0	107	Yes
Eglish Mountain	Operational	6	ESB (Northern Wind Power)	A/2005/0223/F	Londonderry	905265	650025	10244.92	0	107	Yes
Eglish Mountain	Operational	6	ESB (Northern Wind Power)	A/2005/0223/F	Londonderry	904567	650338	9900.49	0	107	Yes
Eglish Mountain	Operational	6	ESB (Northern Wind Power)	A/2005/0223/F	Londonderry	904945	650504	10295.24	0	107	Yes
Eglish Mountain	Operational	6	ESB (Northern Wind Power)	A/2005/0223/F	Londonderry	904940	649964	9949.961	0	107	Yes
Curryfree	Operational	6	ESB	A/2004/1243/F	Londonderry	909544	643798	12371.69	60	100	Yes
Curryfree	Operational	6	ESB	A/2004/1243/F	Londonderry	909358	643953	12193.62	60	100	Yes
Curryfree	Operational	6	ESB	A/2004/1243/F	Londonderry	909337	644478	12213.44	60	100	Yes
Curryfree	Operational	6	ESB	A/2004/1243/F	Londonderry	909006	644380	11874.61	60	100	Yes
Curryfree	Operational	6	ESB	A/2004/1243/F	Londonderry	908854	644645	11751.41	60	100	Yes

Curryfree	Operational	6	ESB	A/2004/1243/F	Londonderry	909218	644166	12067.46	60	100	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	908069	646889	11386.11	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907648	647085	11037.24	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907635	647519	11160.33	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	908095	647522	11596.43	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	908087	647955	11733.66	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907741	648190	11497.61	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907513	648603	11452.55	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907227	647913	10916.93	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907127	647524	10683.9	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	906786	647643	10407.48	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	906968	648058	10733.7	65	106.2	Yes
Slieve Kirk	Operational	12	Airtricity	A/2004/1130/F	Londonderry	907960	648624	11868.19	65	106.2	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	908103	643630	10925.64	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907741	643357	10558.1	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907426	643333	10243	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907754	642951	10575.5	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	908008	642675	10840.95	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907947	642305	10806.74	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907579	642329	10438.15	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907209	642961	10030.57	63.5	110	Yes
Carrickatane	Operational	9		J/2005/0211/F	Londonderry	907479	642742	10309.25	63.5	110	Yes

Drumcraig Road (19)	Operational	1		A/2011/0548/F	Londonderry	908738	640523	11701.01	37	54	Yes
Clondermot	Operational	1		A/2007/0153/F	Londonderry	913588	643941	16418.44	0	110	Yes
Trench Road (51)	Operational	1		LA11/2018/1155/F	Londonderry	913271	643767	16095.33	33.5	53	Yes
Trench Road (51)	Operational	1		A/2011/0249/F	Londonderry	913141	643781	15965.31	30	45	Yes
Meenagrauv	Operational	4	REDWIND ENERGY	09/60312	Donegal	899654	611936	29865.35	49	75	Yes
Meenagrauv	Operational	4	REDWIND ENERGY	09/60312	Donegal	899624	611776	30022.68	49	75	Yes
Meenagrauv	Operational	4	REDWIND ENERGY	09/60312	Donegal	899426	611784	29998.16	49	75	Yes
Meenagrauv	Operational	4	REDWIND ENERGY	09/60312	Donegal	899508	611990	29799.75	49	75	Yes
Magheramore	Application	6	Renewable Energy Systems Ltd	LA01/2019/0922/F	Causeway and Glens	904605	669235	26277.62	94	149.9	Yes
Magheramore	Application	6	Renewable Energy Systems Ltd	LA01/2019/0922/F	Causeway and Glens	904839	668992	26116.96	94	149.9	Yes
Magheramore	Application	6	Renewable Energy Systems Ltd	LA01/2019/0922/F	Causeway and Glens	905152	668543	25791.08	94	149.9	Yes
Magheramore	Application	6	Renewable Energy Systems Ltd	LA01/2019/0922/F	Causeway and Glens	905310	668246	25562.5	94	149.9	Yes

Magheramore	Application	6	Renewable Energy Systems Ltd	LA01/2019/0922/F	Causeway and Glens	904641	668646	25726.72	94	149.9	Yes
Magheramore	Application	6	Renewable Energy Systems Ltd	LA01/2019/0922/F	Causeway and Glens	904778	668320	25459.41	94	149.9	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	869459	635407	27568.7	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	869666	635652	27306.53	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	869871	635851	27057.81	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	870023	636093	26852.01	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	871617	634345	25802.45	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	871540	634626	25788.72	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	871546	634927	25693.09	85	126	Yes

Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	871479	635214	25674.6	85	126	Yes
Pigeon Top	Consented	9	TCI Renewables	K/2011/0592/F	Omagh and Fermanagh	871393	635489	25681.02	85	126	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	870341	634238	27049.42	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	870328	634638	26942.55	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	870734	634682	26540.88	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	871103	634422	26267.57	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	869347	636294	27463.82	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	869685	636227	27149.69	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	869856	636468	26928.07	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	870680	636381	26145.7	0	125	Yes

Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	870601	635984	26317.85	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	871134	636005	25796.04	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	871338	636540	25469.57	0	125	Yes
Pollnalaght	Operational	12	Jennings O'Donovan & Partners	K/2006/1368/F	Omagh and Fermanagh	871717	635957	25244.67	0	125	Yes
Bessy Bell II Extn.	Consented	4	SSE	K/2013/0145/F	Tyrone	881069	639340	15360.58	80	115	Yes
Bessy Bell II Extn.	Consented	4	SSE	K/2013/0145/F	Tyrone	880788	639494	15595.23	80	115	Yes
Bessy Bell II Extn.	Consented	4	SSE	K/2013/0145/F	Tyrone	880449	639574	15905.39	80	115	Yes
Bessy Bell II Extn.	Consented	4	SSE	K/2013/0145/F	Tyrone	880693	640038	15564.8	80	115	Yes
Crockdun	Operational	5	ESB	K/2006/0074/F	Tyrone	876863	659796	25209.35	65	110	Yes
Crockdun	Operational	5	ESB	K/2006/0074/F	Tyrone	876859	660185	25468.63	65	110	Yes
Crockdun	Operational	5	ESB	K/2006/0074/F	Tyrone	876966	660563	25641.8	65	110	Yes
Crockdun	Operational	5	ESB	K/2006/0074/F	Tyrone	877125	660959	25794.21	65	110	Yes
Crockdun	Operational	5	ESB	K/2006/0074/F	Tyrone	876669	660885	26078.46	65	110	Yes
Ballylaw Road	Operational	1	HHT Renewables Ltd	LA11/2022/1045/F	Tyrone	902453	639798	5682.04	40	67	Yes
Dunnyboe Road	Application	1	HHT Renewables Ltd	LA11/2022/0938/F	Tyrone	898353	647183	3423.453	46	76.5	Yes

Erganagh Road	Consented	1	HCRS Ltd	LA11/2019/0936/F	Tyrone	885711	628299	17160.02	55	81	Yes
Rushall Road	Operational	1		LA11/2016/0735/F	Londonderry	910998	644640	13882.42	50	63.5	Yes
Ligford Rd	Consented	1	Cluckalcladdy Mountain Ltd	LA11/2022/0205/F	Tyrone	892380	646503	4778.102	33	55	Yes
Lislafferty Road	Operational	1		LA11/2021/0242/F	Tyrone	884526	634524	13932.45	45	68.5	Yes
Lislafferty Road II	Operational	1		LA11/2021/0247/F	Tyrone	884684	634420	13850	45	68.5	Yes
Peacock Road	Operational	1		LA11/2021/0203/F	Tyrone	891341	631146	11694.89	40	59.5	Yes
Curlyhill Road	Application	1	BSI Wind	LA11/2022/0731/F	Tyrone	897537	637502	4212.526	40	66.5	Yes
Castlewarren Road	Operational	1		LA11/2022/0571/F	Tyrone	906917	647201	10377.49	40	19.5	Yes
Aghalougher Rd	Application	1	Killeter Wind Ltd	LA11/2022/0563/F	Tyrone	879386	619143	28268.88	59	86	Yes
Concess Road	Application	1		LA11/2022/0203/F	Tyrone	889846	632676	11165.2	47	70.5	Yes
Greenville Road	Consented	1		LA11/2019/0724/F	Tyrone	885736	633126	13727.09	45	68.5	Yes
Loughan Road	Under Construction	1		LA11/2019/0379/F	Tyrone	903202	646212	6548.502	40	26	Yes
Cavan Road (68)	Appeal	1		LA11/2018/0133/F	Tyrone	885551	623632	21076.79	40	59.5	Yes

Cavan Road (66)	Appeal	1		LA11/2018/0130/F	Tyrone	885443	623591	21168.44	40	62	Yes
Botera Road (81)	Application	1		LA10/2022/1047/F	Tyrone	871595	639001	24695.19	40	54.5	Yes
Meenanilta	Operational	6	REDWIND ENERGY LTD	018143 018304 018305	Donegal	900173	611335	30512.16	49	75	Yes
Meenanilta	Operational	6	REDWIND ENERGY LTD	018143 018304 018305	Donegal	900024	611196	30636.41	49	75	Yes
Meenanilta	Operational	6	REDWIND ENERGY LTD	018143 018304 018305	Donegal	900046	610912	30920.55	49	75	Yes
Meenanilta	Operational	6	REDWIND ENERGY LTD	018143 018304 018305	Donegal	899901	610770	31048.46	49	75	Yes
Meenanilta	Operational	6	REDWIND ENERGY LTD	018143 018304 018305	Donegal	900248	610963	30890.3	49	75	Yes
Meenanilta	Operational	6	REDWIND ENERGY LTD	018143 018304 018305	Donegal	900209	611533	30318.76	49	75	Yes
Ballykeery Road 2	Application	1		LA11/2022/1099/F	Tyrone	894521	642179	1613.283	59	85	Yes
Ballykeery Road	Operational	1			Tyrone	894593	642148	1548.595	59	85	Yes
Dalradian Overhead Powerline[1]	Application	N/A	NIE	LA11/2019/1000/F	Derry City and Strabane	N/A	N/A	29	N/A	N/A	N/A

[1] This is an overhead power line that is proposed to run within proximity of the Development and at its closest point comes within 29m of turbine T13

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