Allt an Tuir Renewable Energy Park Limited

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Environmental Impact Assessment Scoping Report

Project no. 663657

.

DECEMBER 2023

RSK GENERAL NOTES

Project No.: 663657-01

Title: Environmental Impact Assessment Scoping Report

Client: Allt an Tuir Renewable Energy Park Limited

Date: December 2023

Office: Glasgow

Status: Final

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1 INTRODUCTION

1.1 Background

RSK Environment Ltd (RSK) has been instructed by Allt an Tuir Renewable Energy Park Limited (hereafter referred to as the 'Applicant') to produce information to support an Environmental Impact Assessment (EIA) Scoping Opinion request (hereafter referred to as the 'EIA Scoping Report') to accompany an application for consent for the Allt an Tuir Renewable Energy Park, a new mixed energy generating station proposed to the north west of Rosehall, Sutherland, in The Highland Council (THC) area (hereafter referred to as the 'Proposed Development'). The location of the Proposed Development is shown **in Figure 2.1** ('the Site') and the EIA Site boundary and initial turbine layout are shown in **Figure 2.2**. **Figure 2.3** shows environmental designations located within 10 km of the Site[1].

1.1.1 The application for consent is subject to an EIA. The EIA Report will comprise the following elements:

- Volume 1: Non-Technical Summary
- Volume 2: EIA Report
- Volume 3: EIA Report Figures
- Volume 4: EIA Technical Appendices

The purpose of this EIA Scoping Report is to establish the scope of the EIA Report that will be prepared in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (hereafter referred to as the 'EIA Regulations 2017') and will accompany the Applicant's application for consent.

The Proposed Development will comprise up to nine onshore wind turbines, a battery energy storage system (BESS) and a solar photovoltaic (PV) array with associated infrastructure. Each turbine is likely to generate up to 6.6 Megawatts (MW) of electricity. The total installed capacity of the Proposed Development is expected to be greater than 50 MW.

The Applicant has appointed RSK, an experienced environmental consultancy, as lead consultant to carry out an EIA and related assessments to accompany an application to the Scottish Ministers under Section 36 of the Electricity Act (Scotland) 1989 (as amended) (the 'Electricity Act 1989').

RSK is a fully integrated, environmental, health, safety and engineering consultancy with extensive experience of providing environmental, health, safety and engineering services to the renewable energy onshore wind sector.

Subject to achieving Section 36 consent, construction of the Proposed Development is anticipated to commence in Q2 of 2026 with completion achieved by Q4 of 2027.

1.2 Definition of an EIA

The term 'Environmental Impact Assessment' ('EIA') describes a procedure that must be followed for certain types of projects before it can be given 'consent'. The procedure is a means of drawing

[1] Landscape designations are shown on the accompanying **Figure 6.2**.

together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for avoiding, preventing, reducing or, if possible, offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

1.3 Requirement for EIA

Any proposal to construct or operate a power generation scheme with a capacity in excess of 50 MW requires Scottish Ministers' consent under Section 36 of the Electricity Act 1989.

Under the EIA Regulations 2017, the Scottish Ministers are required to consider whether the proposals are likely to have a significant effect on the environment. In order to do this, the Applicant intends to submit an EIA Report describing the potential for significant environmental effects to occur as a result of the Proposed Development.

While not a statutory requirement, as part of the EIA process, the Applicant wishes to seek a formal scoping opinion from the Scottish Government Energy Consents Unit (ECU) on behalf of the Scottish Ministers under the EIA Regulations 2017. The aim of the request is to seek the opinion of the Scottish Ministers with regards to what elements of the Proposed Development are expected to be included within the EIA Report.

1.4 Purpose of the Report

Part 4 Section 12 of the EIA Regulations 2017 allows a developer to request the Scottish Ministers adopt a scoping opinion. This EIA Scoping Report has been prepared in accordance with Section 12(2) of the EIA Regulations 2017.

The purpose of this EIA Scoping Report is to ensure that the subsequent EIA is focused on the key impacts likely to give rise to significant adverse environmental effects, and to obtain agreement on the EIA approach and scope. This EIA Scoping Report also identifies those elements that are not considered necessary to assess further. This approach is in line with the general aim to undertake proportionate EIA, as advocated by industry best practice.

Whilst this EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental factors and associated effects, the exact scope of the EIA will be influenced by the scoping opinion received, consultation with local communities and stakeholders (including THC's formal pre-application consultation process, as discussed further in **paragraphs 0** and **0**), the on-going design evolution of the Proposed Development, and through on-going baseline data collection (e.g. field surveys, etc.). In this regard, a list of 'key questions for consultees' is presented within **Chapters 6** to **14** of this EIA Scoping Report, the aim of which is to assist the scoping consultees in responding, and the Scottish Ministers in forming the scoping opinion.

Table 1.1 sets out what information the EIA Regulations 2017 state that a request for a scoping opinion must include and where this information can be found in this EIA Scoping Report.

Table 1.1 Information required to accompany a request for a scoping opinion

Information Required	Location within this Report
A description of the location of the development	**Paragraph 2.3.1.**
A plan sufficient to identify the land	**Figure 2.1**
A brief description of the nature and purpose of the development and of its likely significant effects on the environment	**Chapters 2-17**
Such other information or representations as the person making the request may wish to provide or make	See whole EIA Scoping Report

1.5 References

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/580/contents/made. (Accessed November 2023).

The UK Government (1989). Electricity Act 1989. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents (Accessed December 2023).

2 DESCRIPTION OF THE NATURE AND PURPOSE OF THE PROJECT

2.1 Need for the Project

In line with the UK Government's target for achieving net zero carbon emissions by 2050, and the Scottish Government's target of 2045, additional capability to generate electricity using renewable sources is required. The Proposed Development will help to meet that target by providing more than 50 MW of renewable electricity capacity from wind turbines, solar PV panels and batteries.

2.2 Project Objectives

The project objectives are:

- To construct and operate a renewable energy park comprised of a mix of energy generating sources;
- To contribute to the Scottish and UK Government's aim of Net Zero carbon emisssions; and
- To introduce appropriate, site-specific measures to conserve, restore, and enhance biodiversity, in accordance with national and local guidance.

2.3 Project Location

The Proposed Development is located within the administrative area of The Highland Council Local Authority. Its centre point is at National Grid Reference 904485, 244631. It is located north west of Rosehall off the A837 which is one of the main roads between the eastern coast around the Dornoch Firth and the western coast around the North Minch, Ullapool and Lochinver.

Nearby places of note and their nearest distance from the Site boundary include:

- Rosehall – 1.05 km
- Brae and Doune, Ardgay – 2.5 km
- Altass, Lairg – 4.2 km
- Auchintoul, Lairg – 6.1 km
- Achnahanat – 6.3 km
- Achany – 10 km
- Lairg – 11.7 km
- Invershin and Culrain – 13 km

The northern section of the Site is situated close to the River Cassley in the east which runs in a north to south direction. A tributary to the River Cassley, the Allt an Tuir, forms the southern boundary of the Site and lends the Proposed Development its name.

2.4 Site Description

The Site is the area shown in **Figure 2.2**. It is approximately 777 hectares (ha) in size, roughly triangular in shape between the River Cassley to the east and the Allt an Tuir to the south.

The landform across the Site ranges from 20 m Above Ordnance Datum (AOD) in the south east to approximately 300 m to the south east of Beinn Rosail. The Site comprises open moorland and mosaics of blanket bog on the upland plateau, with blocks of coniferous plantation and broad-leaved woodland on the lower areas closer to the River Cassley. Deer stalking and forestry management operations take place on the Site.

The Site lies entirely within the River Oykel catchment. Adjacent to the Site are two main tributaries to the River Oykel: the River Cassley, along the eastern Site boundary, and its tributary the Allt and Tuir, forming the southern Site boundary. Both join the River Oykel downstream of the Site. Drainage within the Site is provided by a number of tributaries to the River Cassley and Tutim Burn, a further tributary to the River Oykel located 530 m south west of the Site.

Part of the Site is located within the Reay-Cassley Wild Land Area (see **Figure 6.2**). The Site also contains peat which varies in depth from 0 cm to 450 cm (see **Figure 9.1**).

Surrounding land uses include commercial forestry and other wind farm developments situated nearby, namely the operational Rosehall and Achany wind farms and the consented Achany Extension Wind Farm, all situated to the east of the Site.

The Site is relatively remote, with the closest residential properties located in Invercassley approximately 330 m to the southeast of the Site boundary (2.1 km from the nearest wind turbine in the Scoping layout). The settlement of Rosehall sits just over 450 m from the Site boundary (2.75 km from the nearest wind turbine in the Scoping layout).

2.5 Project Description

The Proposed Development will comprise up to nine wind turbines with maximum tip heights of 200 m, a battery energy storage system (BESS) and a solar photovoltaic (PV) array with associated infrastructure.

Construction access to the Site will be taken from the A837, making use of existing agricultural and forestry tracks where practicable. Construction of the Proposed Development is anticipated to last approximately 18 months.

The Site is approximately 777 ha in size. Only a small amount of land within the Site boundary will be developed for access and energy production purposes with most of the land remaining undeveloped, ,or subject to habitat enhancement such as improvement or peatland restoration.

The wind turbines proposed as part of the Proposed Development will have the following physical characteristics:

- Maximum of nine wind turbines
- Height to blade tip: up to 200 m;
- Indicative hub height: 118.5 m;
- Indicative rotor diameter: 163 m;
- Individual turbine generating capacity: up to 6.6 MW; and

- The total generating capacity of the Proposed Development (wind turbines, BESS and Solar PV Array) will be in excess of 50 MW and less than 100 MW.

The grid references for the wind turbine locations are provided in **Table 2.1** below. The proposed maximum height to blade tip for turbines is 200 m, except for Turbine T9 which is at 180 m. Turbine T9 is closest to Rosehall and has been lowered to reduce the visibility to properties within Rosehall.

Table 2.1 Grid references and potential height to blade tip for proposed nine-turbine EIA scoping layout

Turbine No.	Easting	Northing	Height to tip
T1	243162	905379	200
T2	243167	904726	200
T3	243672	905280	200
T4	243712	904716	200
T5	243306	904256	200
T6	244201	904557	200
T7	243781	904083	200
T8	244468	904122	200
T9	244627	903761	180

The precise number, location and maximum tip height of each wind turbine will be confirmed through the EIA process and reported in the EIA . The final design will be based on the parameters identified in **Section 2.5** above.

The Proposed Development infrastructure will likely include:

- Wind turbines and associated infrastructure including crane hardstandings and foundations;
- Access track;
- Internal and private access road network including watercourse crossings where necessary;
- Permanent meteorological mast(s);
- Temporary borrow pit(s);
- Transformers and underground cables;
- Onsite sub-station / switchgear building;
- Energy storage equipment (battery);
- Solar PV Array and associated transformer station(s); and
- Temporary construction compound(s).

The Proposed Development will likely evolve over the course of the design development process up to submission of the application for consent.

Wind Turbines

Based on current information, it is anticipated that the Site can accommodate up to nine turbines. The final number of turbines will be determined by environmental, technical, and commercial constraints identified during the EIA and iterative design process. A maximum blade tip height of 200 m is being considered; however, the final dimensions of each turbine up to a maximum tip

height of 200 m will also be determined as the design progresses. The detailed design specification for each new foundation will depend on the type of turbine procured and the specific ground conditions at the location of each turbine.

Permanent Meteorological Mast

The Proposed Development will likely include permanent anemometer mast(s) located within the Site to provide ongoing monitoring of the wind conditions after commissioning. The selection of the anemometer mast(s) will take account of the ease of construction and ability to reduce visual impact. Access to the anemometer mast(s) would likely connect with the main network of site tracks (see below).

Access to Site and internal tracks

An upgraded access to the Site for vehicles delivering both construction materials and the turbine components will be required. Technical feasibility studies are ongoing to identify potential access route options that are commercially and technically viable. These route options will then be subject to an environmental appraisal before selecting a proposed Site access option. The proposed Site access option will be included in the iterative design process.

Tracks used by construction vehicles will be retained throughout the lifetime of the Proposed Development for use by maintenance vehicles. The width of the tracks will be approximately 6 m, although there may be some localised widening and a requirement for passing places and laydown areas. The surface of the tracks will have a cross fall to drain run-off into ditches on the downhill side of the track where necessary, and lateral and cross drains will also be installed where required. Drain outlets will be suitably located with erosion protection as required.

Stone and Aggregate

The Proposed Development will require crushed stone to construct new tracks, create hard standing areas for the cranes and lay the turbine foundations. Whether the stone and aggregate will be sourced from on-site borrow pits or delivered to Site from external sources will be confirmed during the design process and EIA phase.

Grid connection and energy storage

Cables from the Proposed Development will be connected to the substation building, which will incorporate the switchgear and metering equipment. In addition to the grid connection equipment, a control and metering room, telecommunications equipment, an office, welfare facilities and parking for visiting staff will be provided.

The cable connection of the substation to the wider grid network will be subject to a separate application for consent. Therefore, this will not be considered as part of the EIA for the Proposed Development.

In addition to wind farm operation control and connection for export to the grid network, the potential use of equipment and facilities for the BESS will be considered during the design process which will be informed by the EIA. Storage may take the form either of housed or containerised arrays of lithium or other batteries, or potentially other non-battery forms of energy storage technology. The power and energy capacity of such storage will be subject to the final installed capacity of the wind farm element of the Proposed Development and, depending on the nature of grid connection secured, may be additional to the total generation capacity of the Proposed

Development. It is anticipated that the BESS will have an installed capacity of approximately 12MW.

All power and cabling on-site from and between the Site will be buried in trenches located directly adjacent to the internal tracks where possible.

Solar PV Array

A solar PV array is proposed. The location of the solar array will be determined once further environmental information is obtained. It is anticipated that the solar farm will have an installed capacity of approximately 20 MWp.

Biodiversity enhancements

The finalised design will incorporate a suite of peatland restoration and biodiversity enhancements appropriate for the Site and its geographical and habitat context. The enhancements will be contained within an Outline Biodiversity Enhancement Management Plan (OBEMP), or similar, and a Peat Management Plan to accompany the EIA report.

Construction Phase

It is estimated that it will take approximately 18 months to construct the Proposed Development.

Construction works would include:

- Temporary and permanent highway modifications to enable vehicles to access the Site from the local and strategic highway network;
- Construction of permanent new access tracks required to access the wind turbine positions. These would be used by civil engineering plant and construction equipment;
- Construction of a secure site compound(s) / laydown areas / storage areas for Site office facilities and storage of materials and components;
- Creation of borrow pits to access stone and aggregate for construction;
- Installation of hardstandings and outrigger pads for the support of the cranes that would be used for the erection of the turbines;
- Construction of foundations for the support of the turbine structures;
- Wind turbine delivery and erection;
- Installation of transformers in separate housings alongside each wind turbine (if required);
- Battery storge delivery and placement including any required enclosures;
- Delivery and installation of a solar PV array and transformer stations and a perimeter deer-proof fence;
- Installation of on-site High Voltage cabling, communication cabling and earthing;
- Installation of Supervisory Control and Data Acquisition system;
- Construction of Site substation and substation compound;
- Commissioning of Site mechanical and electrical equipment;
- Reinstatement and landscaping, removal of temporary site offices, reseeding verges and areas around turbine base; and
- Installation of one or more permanent met masts.

2.5.1 The design of the Proposed Development is not yet finalised and therefore there is potential for some elements to be changed through the EIA process. In order to ensure any effects are identified and considered, the 'Rochdale envelope' approach will be used. This will state where such elements of the design are not yet fixed and will take forward the 'worst case scenario' as the basis of the Proposed Development to ensure that the most significant level of effects are identified in the EIA Report.

Operational Phase

It is anticipated that the Proposed Development would operate for 40 years. During this phase, regular servicing, repair and/or maintenance of Proposed Development components, including access tracks, would take place. Once operational, the Site would not be permanently manned.

Decommissioning Phase

At the end of the operational period, the Proposed Development would be decommissioned, which would involve the complete removal of the wind turbines, solar PV array, transformers, substation, battery energy storage, switchgear and other equipment. Their removal would essentially be the reverse of the construction process. The components would be removed off-site to be re-used elsewhere, dismantled and recycled, or disposed of as appropriate. Decommissioning proposals would be established and agreed with relevant authorities prior to commencement of decommissioning activities, which would follow guidance available at the time.

2.6 References

HM Government (2021). Net Zero Strategy: Build Back Greener. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf. (Accessed November 2023)

Scottish Government (2019) The Climate Change (Emissions Reduction Targets) (Scotland) Act, 2019. Available at: https://www.legislation.gov.uk/asp/2019/15/enacted (Accessed November 2023)

3 PLANNING & ENERGY POLICY CONTEXT

3.1 Introduction

The EIA Report's Planning & Energy Policy Chapter will provide the legislative and policy context relevant to the Proposed Development.

A separate Planning Statement will consider the Proposed Development in the context of planning and other policy objectives, concluding with comments about the extent to which the Proposed Development complies with the aims and objectives of relevant plans and policies. It will also reference climate change legislation and objectives and the contribution of the Proposed Development to both UK and Scottish Government climate change targets.

3.2 Planning Policy and Guidance

3.2.1 The planning policy context applicable to the Site will be taken into account in the iterative EIA design process and will also be described in the EIA Report.

The Proposed Development falls wholly within the administrative boundary of THC. Accordingly, the statutory Development Plan for the Site comprises the following:

- National Planning Framework 4 (NPF4) (2023);
- Highland Wide Local Development Plan (HwLDP) (2012);
- Caithness & Sutherland Local Development Plan (CaSPlan) (2018); and
- Relevant Supplementary Guidance, particularly the Onshore Wind Energy Supplementary Guidance (OWESG) (2016) and its associated Addendum (2017).

National Planning Framework 4

NPF4 was adopted on 13th February 2023 and replaced both National Planning Framework 3 (NPF3) and Scottish Planning Policy (SPP) in their entirety. It renews the positive context for the continued roll out of renewable energy development within the context of the 2045 net zero target and the associated interim targets, including the aim of achieving a 75% reduction in greenhouse gas emissions by 2030 compared to 1990 levels.

NPF4 presents commentary on five Regional Spatial Strategies, each of which will contribute in their own different ways to the achievement of the National Spatial Strategy. The Site is located within the 'North' Regional Area, shown indicatively on the map on page 27. NPF4 notes under the 'Priorities' sub-heading that *"this part of Scotland can continue to make a strong contribution towards meeting our ambition for a net zero and nature positive country…"* (page 26).

National Development 3 'Strategic Renewable Electricity Generation and Transmission Infrastructure' sets out a list of developments that have national status, including electricity generation from renewables with a capacity of 50 MW or more. National Development status means that the principle of such development does not need to be agreed later in the consenting process. The Proposed Development falls within this National Development category.

NPF4 Policy 11 Energy is particularly relevant to the Proposed Development. Its objective is to *"encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and*

distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage (CCUS)". It confirms that all forms of renewable, low carbon and zero emissions technologies will be supported. These include *"wind farms including repowering, extending, expanding and extending the life of existing wind farms"; "solar arrays";* and, *"energy storage such as battery storage and pumped storage hydro".*

The EIA Report and Planning Statement will summarise other relevant NPF4 policies applicable to the Proposed Development covering inter alia: the climate and nature crises; biodiversity; natural places (including landscape designations); soils; and historic assets.

Local Planning Policy & Guidance

The Scottish Government's Chief Planner issued a letter on 8th February 2023 relating to 'Transitional Arrangements for National Planning Framework 4' and to provide advice on NPF4 becoming part of the statutory Development Plan. The letter reiterates that, as per Section 13(2)(3) of the Planning (Scotland) Act 2019, in the event of any incompatibility between a provision of NPF4 and a provision of a Local Development Plan (LDP), whichever of them is later in date shall prevail. In the case of the Proposed Development therefore, NPF4 is to prevail as the more recent document in the event of any policy incompatibility.

While the policies within the HwLDP require to be considered 'in the round', HwLDP Policy 67 Renewable Energy Development is likely to be of most relevance to the assessment of the Proposed Development. Subject to balancing various considerations and taking into account any proposed mitigation measures, it states that *"…the Council will support proposals where it is satisfied that they are located, sited and designed such that they will not be significantly detrimental overall, either individually or cumulatively with other developments (see Glossary), having regard in particular to any significant effects on the following:*

- *natural, built and cultural heritage features;*
- *species and habitats;*
- *visual impact and impact on the landscape character of the surrounding area (the design and location of the proposal should reflect the scale and character of the landscape and seek to minimise landscape and visual impact, subject to any other considerations);*
- *amenity at sensitive locations, including residential properties, workplaces and recognised visitor sites (in or out with a settlement boundary);*
- *the safety and amenity of any regularly occupied buildings and the grounds that they occupy - having regard to visual intrusion or the likely effect of noise generation and, in the case of wind energy proposals, ice throw in winter conditions, shadow flicker or shadow throw;*
- *ground water, surface water (including water supply), aquatic ecosystems and fisheries;*
- *the safe use of airport, defence or emergency service operations, including flight activity, navigation and surveillance systems and associated infrastructure, or on aircraft flight paths or MoD low-flying areas;*
- *other communications installations or the quality of radio or TV reception;*
- *the amenity of users of any Core Path or other established public access for walking, cycling or horse riding;*
- *tourism and recreation interests; and*
- *land and water-based traffic and transport interests".*

HwLDP Policy 67 also confirms that THC will consider *"the contribution of the proposed development towards meeting renewable energy generation targets"* and, *"any positive or negative effects it is likely to have on the local and national economy".*

The OWESG provides additional guidance on the principles set out in HwLDP Policy 67. The Addendum includes landscape sensitivity appraisals and strategic capacity conclusions for i) the 'Black Isle, Surrounding Hills and Moray Firth Coast' t and ii) 'Caithness' THC is in the process of undertaking further landscape sensitivity appraisals (and identifying strategic capacity) for wind energy across the Highlands (including for Sutherland and Ross-shire).

The CaSPlan focuses largely on regional and settlement strategies and specific site allocations, rather than planning policies of relevance to renewable energy and onshore wind. It does however state in paragraph 53 that, *"investment in renewable energy generation in North Highland is not only helping to meet Council and national climate change targets but it has also delivered economic benefits for the area. Onshore wind energy has grown significantly over recent years, particularly in the south and north-east of the Plan area".*

Other Planning Policy

In addition to the Development Plan, the EIA Report will refer to various other planning policy and guidance documents including:

- Scottish Government web-based renewables guidance;
- Scottish Government Planning Advice Notes; and
- Scottish Government policy and good practice guidance on community benefit funding and community shared ownership

3.3 Climate Change and Energy Policy

The EIA Report will summarise the renewable energy policy framework and associated needs case for renewables, identified as a matter of both law and policy, at international, European and domestic levels.

Energy policy documents are published and updated on a regular basis and the documents noted in this section are the current versions of the main documents likely to be of most relevance to the Proposed Development. Any revisions to these documents, or new policy documents, published by the time the application is submitted will be referenced in the EIA Report.

The Proposed Development relates to the generation of electricity from renewable energy sources and comes as a direct response to the climate emergency and energy policy objectives. The EIA Report will discuss the binding commitments set out in the COP21 UN Paris Agreement 2015 (the 'Paris Agreement') temperature goal of holding back the increase in the global average temperature to well below 2°C above pre-industrial levels.

Reference will also be made to the UN Emissions Gap Reports, which are published on an annual basis. The latest 2022 report shows that the world is on track for a global temperature rise of between 2.4°C -2.6°C by the end of this century. To keep global warming below 1.5°C this century, the aspirational goal of the Paris Agreement, the report states that global greenhouse gas emissions must be reduced by 45%, compared with current policy projections.

The clear objectives of the UK and Scottish Governments will be summarised in the EIA Report, in relation to encouraging increased deployment and application of renewable energy technologies, consistent with sustainable development policy principles and national and

international obligations on climate change. In addition to various Committee on Climate Change (CCC) publications, reference will also be made to the British Energy Security Strategy and the Energy Security Act 2023.

The Proposed Development will clearly make a contribution to the attainment of renewable energy generation and greenhouse gas reduction targets at both Scottish and UK levels and the quantification of this contribution will be described. The description of the renewable energy policy framework will also refer to the Scottish Government's Draft Energy Strategy & Just Transition Plan and the Onshore Wind Policy Statement 2022.

The Proposed Development will also be considered in terms of the Scottish Government's declared 'climate emergency', the target for a 75% reduction in greenhouse gas emissions by 2030 and the legally binding 2045 net zero reduction target.

3.4 Key Questions for Consultees

The following questions are directed to consultees:

- Do consultees agree with the extent of the planning policy and energy documents to be considered in the EIA, as described above?
- Are there any additional planning and energy documents that consultees wish to be considered?

3.5 References

Scottish Government (2018). Good Practice Principles for Community Benefits from Offshore Renewable Energy Developments. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/consultation-paper/2018/11/consultation-scottish-government-good-practice-principles-community-benefits-offshore-renewable-energy-developments/documents/scottish-government-good-practice-principles-community-benefits-offshore-renewable-energy-developments/scottish-government-good-practice-principles-community-benefits-offshore-renewable-energy-developments/govscot%3Adocument/00543548.pdf. (Accessed November 2022).

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THC (2012). Highland Wide Local Development Plan. Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan. (Accessed November 2022).

THC (2018). Caithness & Sutherland Local Development Plan. Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/283/caithness_and_sutherland_local_development_plan. (Accessed November 2022).

THC (various dates). Supplementary Guidance. Available at: https://www.highland.gov.uk/directory/52/a_to_z. (Accessed November 2022).

UK Government (2022). British Energy Security Strategy. Available at: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy. (Accessed February 2023).

UK Government (2023). Energy Security Act. Available at: https://www.legislation.gov.uk/ukpga/2023/52/enacted (Accessed November 2023).

United Nations (2015). The Paris Agreement. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement. (Accessed February 2023).

United Nations (2022). Emissions Gap Report 2022: The Closing Window. Available at: https://www.unep.org/resources/emissions-gap-report-2022. (Accessed February 2023).

4 APPROACH TO EIA

4.1 Introduction

This chapter sets out the overall approach that will be taken to the EIA for the Proposed Development. The EIA Report will contain the information specified in Schedule 4 of the EIA Regulations 2017. The approach to the assessment has been informed by current best practice guidance.

An overview of the guidance and methodology adopted for each environmental factor is provided within the respective environmental factor chapters of this EIA Scoping Report.

The environmental factors to be considered for the Proposed Development, as listed under Regulation 4(3) of the EIA Regulations 2017, are presented below.

- Biodiversity
- Land and soil (factors combined for the purposes of reporting)
- Water
- Climate
- Cultural heritage
- Landscape
- Population and Human Health
- Air
- Material Assets

It should be noted that although not listed as specific environmental 'factors' under Regulation 4(3) of the EIA Regulations 2017, the following are also considered within this EIA Scoping Report:

- Noise and vibration
- Traffic and transport
- Shadow flicker
- Socio economics, tourism and recreation
- Aviation
- Telecommunications
- Forestry
- Glint and glare

Where factors have not been used as the chapter headings, **Table 4.1** below shows which headings have been used instead and how they apply to the factors listed in the EIA Regulations 2017:

Table 4.1 Factors listed in the EIA Regulations 2017 and equivalent chapter headings within this EIA Scoping Report

Factors stated within the EIA Regulations 2017	Equivalent chapter headings within this EIA Scoping Report
Biodiversity	Ecology Ornithology
Water, Land and Soil	Hydrology, hydrogeology, geology & peat
Climate	Climate change emissions
Cultural heritage	Archaeology and Cultural Heritage
Landscape	Landscape and visual
Population and Human Health	Noise and Vibration Traffic and Transport Hydrology, hydrogeology, geology and peat (in relation to peat slide risk)

4.2 Consultation

Energy Consents Unit

A pre-application consultation meeting took place with the ECU in July 2022. This meeting discussed the outline proposals for the Proposed Development including the potential for a mix of energy generation types including, *inter alia*, wind and, solar and/or BESS within the Site (the latter potentially with electric vehicle (EV) charging points). The ECU agreed that as the Proposed Development was expected to exceed 50 MW a Section 36 application would be required.

It was noted that any EV charging points are not covered under the Section 36 application. Rather, a separate Town and Country Planning (Scotland) Act (1997) (as amended) application would be required and would need to be submitted to THC as the Planning Authority. The Applicant is therefore considering the potential to install any EV charging points as part of a separate planning application and a decision with regards to this has been deferred.

Consultation with the ECU confirmed that the following developments have potential for cumulative effects:

- Operational: Rosehall and Achany wind farms; and
- In planning: Achany Extension (since consented) and the Strath Oykel wind farms.

The Highland Council Pre-application Service

Pre-application consultation was undertaken with THC on 23rd November 2022 as the Planning Authority through their pre-application advice service. Representatives from the ECU, NatureScot and the Scottish Environment Protection Agency (SEPA) attended the on-line pre-application meeting. In addition, the pre-application advice report issued on 21st December 2022 also included feedback from Transport Scotland.

Key points made by THC and stakeholders in the meeting included the importance of design in the consideration of the size, location and layout of the turbines as well as any accompanying solar

PV panels (an indicative 12-turbine layout was presented during the meeting). THC noted that it has not yet assessed an application for consent for a solar panel array in an upland setting, so appropriate levels of information will be needed to evaluate this element of the Proposed Development.

Consultations with other bodies

Consultations with relevant authorities, organisations and stakeholders will be undertaken throughout the EIA and design process. The consultations will serve three main purposes:

- To establish a sufficiently robust environmental baseline of the Site and its surroundings;
- To identify, early in the process, specific concerns and issues relating to the Site and Proposed Development in order that they can be discussed and accounted for appropriately in the design and assessment; and
- To ensure appropriate involvement of the public and authorities in the assessment and design process.

4.3 General Difficulties and Uncertainties

Factor-specific limitations and uncertainties are set out in the relevant sections of this EIA Scoping Report. The following key general limitations and uncertainties apply to a number of factors:

- As the design and technology mix of the Proposed Development is not yet fixed, there is potential for uncertainty over what elements of the Proposed Development will be constructed and therefore need to be assessed. However, the description of the Proposed Development details the maximum extent of potential development that may take place, therefore outlining the 'worst case scenario'. This 'worst case scenario' is the scenario that will be assessed within the EIA Report and therefore whatever level or mix of technology is chosen, the EIA Report will ensure that the level of significant effects is fully considered.
- Data from third parties relied upon for the baseline against which any effects will be assessed might be out of date or inaccurate. Any such data will be procured from reputational and industry standard sources. It will be reviewed and used by competent and experienced professional consultants. The combination of appropriate data sources being used by competent and experienced professionals should ensure that the data is suitable for its purpose and will therefore provide an appropriate evidence base from which the existing environmental baseline will be informed.

4.4 Defining the Study Area

Study areas have been defined individually for each environmental factor, taking into account the geographic scope of the potential impacts relevant to that factor and the information required to assess those impacts. The proposed study areas are described within **Chapters 5** to **17** of this EIA Scoping Report.

4.5 Establishing Baseline Conditions

1.1.1 Environmental effects of the Proposed Development will be described in the EIA Report in relation to the extent of changes to the existing baseline environment as a result of the construction and operation of the Proposed Development. The impacts associated with the decommissioning stage are expected to be less than those identified during

construction and are unlikely to be significant. As the potential construction impacts will be assessed within the EIA Report and appropriate mitigation applied to any identified impacts, it is not proposed to assess decommissioning impacts further in this Scoping Report.

1.1.2 The baseline environment will comprise the existing environmental characteristics and conditions, based upon desktop studies, field surveys and modelling undertaken, and information available at the time of the assessment.

The baseline conditions for each environmental factor will be set out within the respective assessment chapters.

4.6 Establishing Future Baseline Conditions

Schedule 4(3) of the EIA Regulations 2017 requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (the 'future baseline'). Whilst there are considerable limitations to the predictions that can be made about natural baseline conditions at a future point in time, some assessments require projections to account for future change, such as traffic growth.

Due to the aforementioned limitations, necessary assumptions and lack of evidence associated with the future baseline (i.e. it cannot be accurately measured), a detailed consideration of the effects of the Proposed Development against the future baseline would generally not result in a robust assessment. However, consideration will be given, in descriptive terms, within each relevant assessment chapter, to likely significant environmental effects arising from the Proposed Development in relation to the future baseline.

4.7 Approach to Mitigation

Mitigation can be relied on to reduce any potential significant effects from the Proposed Development. The sequential steps of the mitigation hierarchy are as follows:

- Avoidance – take measures to avoid creating impacts from the outset;
- Minimisation – measures taken to reduce the duration, intensity and extent of the impact if they cannot be avoided;
- Restoration – measures taken to improve ecosystems following exposure to unavoidable impacts; and
- Offset – measures taken to compensate for any residual impacts.

The Institute of Environmental Management and Assessment's (IEMA) 'Environmental Impact Assessment Guide to Shaping Quality Development' refers to three distinct forms of mitigation:

- Primary - an intrinsic part of the project design;
- Secondary - typically described within the factor specific chapters of the EIA Report, but often are secured through planning conditions and/or management plans; and
- Tertiary - required regardless of any EIA, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

For the purposes of this EIA Scoping Report and the EIA Report, embedded 'primary' mitigation measures will form part of the Proposed Development for which consent is sought. **Table 4.2** describes the currently known embedded (primary) environmental mitigation measures that are considered to be an inherent part of the Proposed Development i.e., the project design principles adopted to avoid or prevent adverse environmental effects, based on the design of the Proposed Development to date. It should be noted that these will likely evolve over the course of the design evolution, up to submission of the application for consent.

These embedded (primary) environmental mitigation measures should not be confused with additional (secondary and tertiary) mitigation measures proposed in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment, which are described under the 'Additional Mitigation Measures' section within each environmental factor assessment chapter [**Chapters 6** to **14**].

Table 4.2 Embedded (primary) environmental mitigation measures

Environmental Factor/topic to which the Embedded (Primary) Environmental Mitigation Measure Relates	Embedded (Primary) Environmental Mitigation Measure and Associated Benefit
Landscape and Visual	• Design of the turbine layout is led by the objective to minimise visibility or, if this is not possible, design a compact and coherent layout which responds to the scale of the landscape and the cumulative wind farm context in key views.
Ecology and Ornithology	• Design to minimise land take and new watercourse crossings with watercourse buffers included. • Use of a Construction Environmental Management Plan (CEMP) to minimise the risk of pollution occurring. • Ecological Clerk of Works to oversee some construction activities. • Disturbance buffers in which construction activities to be controlled for habitats.
Hydrology	• CEMP to minimise the risk of pollution occurring.
Archaeology and Cultural Heritage	• Construction tracks to avoid non-designated heritage assets. • Barriers around heritage assets to prevent/minimise construction impacts. • Design of Proposed Development considers heritage setting for any assets located nearby.
Traffic and Transport	• Use of borrow pit(s) aims to minimise number of heavy goods vehicle (HGV) movements within and to the Site. • CEMP to guide on best practice for preventing accidents and or pollutants being spilled during construction. • Construction Traffic Management Plan to minimise construction traffic impacts.
Noise and Vibration	• Layout of turbines designed to minimise acoustic impact on nearest sensitive receptors.

Environmental Factor/topic to which the Embedded (Primary) Environmental Mitigation Measure Relates	Embedded (Primary) Environmental Mitigation Measure and Associated Benefit
	• Best practice acoustic measures to be followed during construction. • Use of acoustic enclosures for static grid connection and energy storage equipment if required.
Socio economics, Tourism and Recreation	• Recreational routes and paths to remain useable throughout construction phase where feasible, with diversions agreed if they need to be closed temporarily.
Carbon emissions	• Minimise disturbance of the non-developed part of the Site in order to prevent limiting the sequestration capacity at the Site.
Other Issues, Aviation	• A lighting scheme will be designed that meets both the requirements of the Ministry of Defence (MOD) and of the Civil Aviation Authority (CAA).
Other issues, Shadow Flicker	• Turbine layout designed to avoid placement of turbines within zone of potential shadow flicker where feasible
Other issues, Forestry	• The Proposed Development will be designed with an aim to minimise impacts on forestry assets.

4.8 Assessment of Likely Significant Effects

The EIA Report will report on the likely significant environmental effects for the Site preparation, earthworks and construction (hereafter referred to as 'construction') and the operational (i.e., once completed and open to use) phases of the Proposed Development. At the current stage, where predicted effects are not considered to be likely to be significant, it is proposed to "scope out" these from the EIA process, in line with the EIA Regulations and with the aim of focusing on proportionality in EIA and reducing the burden on consultees and other stakeholders. Further details of factors that it is proposed to "scope out" are presented in **Chapter 5** below.

The following criteria will be taken into account when determining significance:

- The receptors/resources (natural and human) which would be affected and the pathways for such effects;
- The geographic importance, sensitivity or value of receptors/resources;
- The duration (short-term, medium-term or long-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
- Environmental and health standards (e.g. local air quality standards) being adhered to; and
- Feasibility and mechanisms for delivering mitigating measures, e.g. is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

The method for assessing significance of effects varies between environmental factors but, in principle, will be based on the environmental sensitivity (or value/importance) of a receptor/resource and the magnitude of change from the baseline conditions. The approach to assessing the significance of effects for each individual factor is outlined within **Chapters 6** to **14**, and **Appendix A**, of this EIA Scoping Report.

Summary of effect tables that outline the likely significant effects associated with each of the environmental factors will be provided in the EIA Report at the end of each factor assessment chapter. These tables will outline sensitive receptors, additional (secondary and tertiary) mitigation measures and residual effects. A distinction will be made between direct, indirect, secondary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects.

4.9 Opportunities for Enhancing the Environment

Where possible, there will be a commitment to identifying opportunities for enhancement within the relevant environmental factor assessments. Enhancement is defined as '*a measure that is over and above what is required to mitigate the adverse effects of a project*'. Therefore, any identified enhancement measures will not be taken into account when determining the significance of effects.

Enhancement measures will be assessed in accordance with steps set out in the National Planning Policy Framework 4 (NPF4) and relevant supporting guidance published prior to the application for consent for the Proposed Development being published.

4.10 References

HM Government. Town and Country Planning Act (Scotland) 1997. Available at: https://www.legislation.gov.uk/ukpga/1997/8/contents. (Accessed November 2023)

Institute of Environmental Management and Assessment (2015). IEMA Environmental Impact Assessment Guide to Shaping Quality Development. Available at: https://www.iaia.org/pdf/wab/IEMA%20Guidance%20Documents%20EIA%20Guide%20to%20Shaping%20Quality%20Development%20V6.pdf. (Accessed November 2023).

Scottish Government (2023). National Planning Framework 4. Available at: https://www.gov.scot/publications/national-planning-framework-4/ (Accessed November 2023).

Scottish Renewables (2023) Onshore Wind Sector Deal for Scotland. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/09/onshore-wind-sector-deal-scotland/documents/onshore-wind-sector-deal-scotland/onshore-wind-sector-deal-scotland/govscot%3Adocument/onshore-wind-sector-deal-scotland.pdf (Accessed November 2023).

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/580/contents/madehttps://www.legislation.gov.uk/uksi/2017/580/contents/made. (Accessed November 2023).

5 ENVIRONMENTAL FACTORS SCOPED OUT

As part of the EIA process and based on the information available to date, there are a number of environmental factors, as listed under Section 4(3) of the EIA Regulations 2017, for which it is considered an assessment as part of the EIA is not justified and therefore will not be considered in the EIA Report.

5.1 Major Accidents and Disasters

The requirement to consider major accidents and disasters in UK EIA practice was introduced via the EIA Regulations 2017. Schedule 4(4) of the EIA Regulations 2017 requires that an Environmental Statement/EIA Report includes:

> *'The effects to be identified, described and assessed under paragraph (2) include the expected effects deriving from the vulnerability of the development to risks, so far as relevant to the development, of major accidents and disasters.'*

According to the IEMA Primer 'Major Accidents and Disasters in EIA' (2020), the main aim of an assessment is to identify any low likelihood/high consequent events that might occur either as a result of the Proposed Development or that might affect the Proposed Development.

The Proposed Development is made up of standardised renewable energy generating technologies i.e. wind and solar which are governed by health and safety regulations during manufacturing, construction and operation. As such, the risk of a high consequence disaster or accident occurring is very low.

The BESS for the Proposed Development will also be installed and operated in line with established health and safety measures including fire safety standard UL9540A[2]. Any battery cells to be used in the BESS will be subject to health and safety regulations during manufacturing with further standard testing expected to take place before operation begins. It is assumed that the BESS system will have monitoring inbuilt to identify any cells that have an abnormally high temperature. This same system would then be expected to be able to power down this cell or section of the BESS to prevent overheating leading to a fire. In the light of the experience gleaned from over 150 operating BESS projects in the UK, BESS safety is now routinely managed by way of planning conditions requiring battery safety management plans to be established prior to construction and in consultation with the relevant authorities, including fire and rescue services. Given this risk mitigation is in place, the risk of a high consequence disaster or accident occurring is very low.

The Site is located in a remote location, at a sufficient distance from any receptors that could interact with, or impact, the technologies that form part of the Proposed Development. Hence, it is expected that the chance of an event occurring that could then lead to a major accident or disaster happening to the Proposed Development is very low.

[2] https://www.ul.com/services/ul-9540a-test-method [accessed November 2022]

With regards to the potential for accidents or disasters occurring due to climate change, none of the following climate trends identified in UK Climate Projections[3] will affect the Proposed Development, with the potential exception of increased windstorms:

- Increased temperature;
- Wildfire;
- 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.

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. The mounting structures of the solar PV panels would be anchored to the ground using several possible methods such as small piles appropriate for the ground conditions and would not be at risk of being blown. In addition, given the elevated location of the Site, flooding would not pose a significant risk to the operation of the Proposed Development, nor would the construction of the Proposed Development contribute to flooding elsewhere.

Therefore, it is considered unlikely that significant effects would arise as a result of the Proposed Development, and major accidents and disasters is proposed to be scoped out of the assessment.

5.2 Heat and Radiation

The requirement to consider heat and radiation in UK EIA practice was introduced via the EIA Regulations 2017.

Schedule 4(5)(c) of the EIA Regulations 2017 requires that an Environmental Statement/EIA Report includes: 'A description of the likely significant effects of the development on the environment resulting from, inter alia:

> (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste.'

Due to the scale and nature of the Proposed Development, it is not anticipated that there would be any significant sources of heat or radiation during construction or operation. The consideration of heat and radiation emissions has therefore been scoped out of the assessment and has not been considered further in this EIA Scoping Report.

5.3 Population and Human Health

As per the EIA Regulations 2017, an assessment of population and human health should be considered during the EIA process.

It is expected that consideration of the potential effects to human health as a result of the Proposed Development will be covered through the findings of other assessments within other chapters undertaken as part of the EIA process. They are as follows:

[3] https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/summaries/climate-change-projections-over-land [accessed November 2022]

- Noise and Vibration;
- Traffic and Transport; and
- Hydrology, hydrogeology, geology and peat.

As each of these chapters within the EIA Scoping Report and subsequent EIA Report will consider the effects to human health within their own assessments, no dedicated EIA chapter will be produced.

Limited interactions with human health are anticipated. Properly designed and maintained wind turbines are a safe technology and the site design and in-built buffers from sensitive receptors would minimise any risk to human health resulting from the operation of the turbines.

All other potential interactions with human health, building in health and safety best practice, and an appropriate approach to layout design, resulting from ice, lightning strike and structural failures are unlikely to occur and as a result, no adverse or significant effects are anticipated.

Population and Human Health is therefore proposed to be scoped out of further assessment.

5.4 Air Quality

The main impact on air quality would be increased traffic flows on local roads during construction and emissions from construction activities. This includes emissions from exhaust fumes and dust generated from quarrying activities at borrow pits and dust from unmade ground at borrow pits and access tracks in dry conditions.

It is considered that the emissions associated with these activities would be transient, localised and highly unlikely to have a significant effect upon local air quality.

In addition, there are well established best practice measures applied to construction that will form an integral part of the development process (e.g., speed control, optimising deliveries to Site, dust control, restrictions on idling plant/vehicles, etc). These controls and measures will form an integral part of the CEMP for the Proposed Development and will be detailed within the relevant parts of the EIA Report.

There would be negligible emissions to air during operation, with the only source being occasional vehicles accessing the Site for maintenance purposes.

Air Quality is therefore proposed to be scoped out of the assessment.

5.5 Glint and Glare

Solar PV panels are specifically designed to absorb light rather than reflect it. Light reflecting from solar PV modules results in the loss of energy output. Solar PV modules are dark in colour due to their anti-reflective coatings and are manufactured with low-iron, ultra-clear glass with specialised coatings and textures to enable maximum absorption.

The combination of these factors significantly increases electrical energy production of the panels and at the same time significantly reduces reflected rays and thus the potential for significant effects relating to glint and glare.

A description of any relevant mitigation measures and safety considerations highlighted within the aforementioned assessments will be included within the Proposed Development description chapter of the EIA Report.

As there are not expected to be any potential impacts beyond those that will already be assessed, it is not necessary to undertake a separate glint and glare assessment. Glint and glare is therefore proposed to be scoped out of the assessment.

5.6 Telecommunications

A telecommunications assessment in relation to the Proposed Development was undertaken by Pager Power in July 2022 (see **Appendix C**), during which consultation was undertaken with the most prevalent telecommunications link operators (based on Pager Power's experience and contacts database).

Impact assessment for telecommunications assets is established by identifying through consultation whether there are telecommunications receptors that may be impacted by the construction and operation of proposed turbines. Consultation with the most prevalent link operators was completed, based on the location of the Site boundary, as shown in **Figure 2.1**.

Through the telecommunications assessment and subsequent consultation process, no telecommunication links were identified within, or in close proximity to the Site. Hence no likely significant effects on the telecommunications network are anticipated as a result of the Proposed Development.

As the assessment has concluded there are not expected to be effects relating to the telecommunications network, telecommunications is therefore proposed to be scoped out of the EIA.

5.7 Socio-economics, Tourism, Recreation, and Land-use

It is proposed that socio-economics, tourism, recreation, and land-use issues be scoped out of the EIA, given that evidence indicates adverse significant effects are unlikely to occur from the Proposed Development. Instead, a Socio-Economic Statement (SES) will be prepared and submitted alongside the application for consent. The objective of the SES will be to predict positive and negative socio-economic effects that might arise from the construction and operation of the Proposed Development. The scope and methodology of the SES is detailed in **Appendix E**.

5.8 References

Copper consultancy (2023), Public attitudes to renewable energy.

Department for Business, Energy & Industrial Strategy (2022), BEIS Public Attitudes Tracker.

Health and Safety Executive (2015), The Construction (Design and Management) Regulations 2015.

Institute of Environmental Management and Assessment, (2020). Major Accidents and Disasters in EIA: A Primer.

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

Scottish Government (2023) National Planning Framework 4.

Scottish Government (2022), Onshore Wind Policy Statement.

Scottish Government ClimateXChange (2012), The Impact of Wind Farms on Scottish Tourism.

Visit Scotland (2014), Position Statement – Wind Farms.

6 LANDSCAPE AND VISUAL

6.1 Consultation

A pre-application meeting with THC was held on 23rd November 2022 and included THC's Landscape Officer. The following stakeholders will be consulted in relation to the Landscape and Visual Impact Assessment (LVIA):

- NatureScot;
- THC;
- Scotways; and
- Mountaineering Scotland.

Following scoping responses, consultation will be carried out to agree the final list of LVIA assessment viewpoints, to confirm the scope of the cumulative assessment and to confirm the scope of the aviation lighting assessment.

6.2 Study Area

It is proposed that the study area for the LVIA will cover a radius of 45 km from the outermost turbines of the Proposed Development in all directions, as shown in **Figure 6.1**. This is in accordance with current NatureScot guidance in relation to turbines of 150 m or higher, measured to the top of the blade tip.

A zone of theoretical visibility (ZTV) plan will be used to assist in identifying which landscape and visual receptors require consideration in the assessment, and which can be scoped out because they are unlikely to be significantly affected. While the design of the Proposed Development is subject to change, the following figures are provided to illustrate the theoretical visibility of the indicative 9-turbine (up to 200 m to blade tip height) layout. These figures also include a 'reverse' ZTV run from the settlement of Rosehall. This figure highlights areas, from the settlement of Rosehall, where a solar PV site (with solar panel heights of up to 3m in height) would theoretically be visible. Wirelines of the scoping layout, from all of the proposed LVIA viewpoints, have also been included in **Appendix D**.

- **Figure 6.1** – Zone of Theoretical Visibility (tip height) and Viewpoint Locations;
- **Figure 6.2** – Landscape Designations and Wild Land Areas with wind turbine ZTV;
- **Figure 6.3** – Landscape Character Types with wind turbine ZTV;
- **Figure 6.4** – Cumulative Baseplan;
- **Figure 6.5** - Aviation Lighting Intensity ZTV;
- **Figure 6.6** - Solar PV Search Area ZTV; and
- **Figures 6.7a** and **6.7b** - Solar PV Search Area Rosehall Reverse ZTV (bare earth and screened by existing vegetation).

6.3 Data Sources to Inform the EIA Baseline Characterisation

- NatureScot National Landscape Character Assessment (LCA) for Scotland;
- Wild Land Area descriptions published by SNH in January 2017;
- The Special Qualities of the National Scenic Areas;
- Highland Council, Assessment of Special Landscape Areas;

- Ordnance Survey (OS) Landranger 1:50,000 scale and Pathfinder 1:25,000 scale maps; and
- Online map search engines.

Modelling

- OS Terrain® 5 height data (DTM); and
- OS Terrain® 50 height data (DTM).

Cumulative Assessment

- Data from other operational wind farms and wind farm applications.

6.4 Surveys to Inform the EIA Baseline Characterisation

Field survey work will be carried out during several visits, and records will be made in the form of field notes and photographs. Field survey work will include visits to the Site, viewpoints, designated landscapes and Wild Land Areas. It will comprise extensive travel around the study area to consider potential effects on landscape character and on experiences of views seen from designated landscapes, settlements and routes.

6.5 Baseline Conditions

The Site is located across the ridge of Beinn an Rosail Beag, to the west of Glen Cassley. The settlement of Rosehall is located approximately 2.9 km to the south-east of the nearest proposed turbine. The landform across the Site ranges from approximately 20 m AOD in the south-east to approximately 300 m on the ridge above the minor summit of Beinn an Rosail Beag. The western valley side of Glen Cassley is characterised by a land cover of coniferous forest. The higher ground to the west and north of the Site is characterised by open moorland.

The Site is within the Rounded Hills Landscape Character Type (LCT) (refer to **Figure 6.3**). The key characteristics of this LCT are as follows:

- *"Rolling hills forming broad, subtly rounded summits but with some more pronounced hills also occurring, these often featuring steeper slopes along the coast or where truncated by deep glens.*
- *Hills cut by numerous narrow burns and small lochans lie within dips, corries and on plateau summits.*
- *Predominantly dense heather ground cover and moorland grasses, but also some areas of bog.*
- *Fragments of broadleaf woodland in inaccessible locations.*
- *Scarcely settled with a largely uninhabited interior and widely scattered crofts and farms on lower slopes adjoining straths and farmed landscapes.*
- *Narrow glens and lower hill slopes often rich in archaeology with features such as standing stones, brochs and medieval townships.*
- *Wind farms located in more accessible and generally lower rolling hills, either close to extensive forestry or the high voltage transmission line aligned broadly parallel to the south-east Sutherland coast.*
- *Convex character of hill slopes limiting distant visibility and views of the hill tops when travelling through the landscape.*
- *Views into the interior of the hills very restricted.*
- *Strong sense of wild character can be experienced within the more remote and little modified parts of this landscape."*

The Site is not located within any nationally or locally designated landscapes (refer to **Figure 6.2**). The Assynt-Coigach National Scenic Area (NSA) is located just beyond 10 km to north west. The

Fannichs, Beinn Dearg and Glencalvie Special Landscape Area (SLA) is located just beyond 10 km to the south.

A section of the Site boundary lies within the south-eastern extents of the Reay-Cassley Wild Land Area (WLA).

Cumulative schemes across the 45 km study area are shown on **Figure 6.4**. The nearest schemes are the operational Rosehall and Achany wind farms, to the east of Glen Cassley. The consented Achany Extension (20 turbines at 149.9 m to tip height), is located to the north west of the Rosehall-Achany operational cluster, and will bring wind energy development further into the Reay-Cassley WLA when constructed. To the south of the A837, Strath Oykel Wind Farm (currently at public local inquiry) comprises 11 turbines at 200 m to tip height and the consented Meall Buidhe Wind Farm comprises 8 turbines at 149.9 m to tip height.

6.6 Additional (secondary and tertiary) Mitigation

The primary form of mitigation for landscape and visual effects, including cumulative effects, is through iterative design of the layout of the turbines and associated infrastructure, as seen from key viewpoints. Design development will be set out in detail in the design strategy that will form part of the EIA Report. Opportunities for landscape mitigation, in the form of habitat enhancement, peat restoration and native woodland planting will also be explored.

6.7 Description of Likely Significant Effects

The selection of receptors to include in the assessment is based on the requirement for EIA to consider the likely significant effects. Effects that are not likely to be significant do not require assessment under the EIA Regulations 2017.

The following will inform the iterative design of the Proposed Development and are key considerations for the LVIA and cumulative LVIA:

- Effects on the landscape fabric of the Site and effects on landscape character;
- Effects on the special qualities of designated landscapes and the key attributes of wild land;
- Effects on the residential visual amenity of the nearest properties;
- Visual effects on sensitive residential receptors including nearby settlements and dispersed properties and communities along Glen Cassley, Strath Oykel and the Kyle of Sutherland;
- Visual effects on sensitive recreational receptors including popular hills and mountain tops;
- Sequential effects on sensitive recreational receptors using the Core Path network and key transport routes; and
- As the proposed turbines are likely to be greater than 150 m to tip, permanent visible aviation lighting will be required. Visual effects associated with lighting will be considered. An aviation lighting ZTV has been prepared (refer to **Figure 6.5**) to accompany this EIA Scoping Report.. As with the turbine design, the aviation lighting design will be subject to change.

It is proposed that the following receptors be scoped into the assessment:

- Rounded Hills LCT and other LCTs within a 20 km radius, upon which there may be potential for significant landscape effects;
- Designated landscapes/ Wild Land Areas (Reay - Cassley WLA, Assynt - Coigach NSA and Fannichs, Beinn Dearg and Glencalvie SLA) where there may be a potential for the Proposed Development to significantly affect special qualities and key attributes. Effects on Dornoch Firth NSA, and wider NSA across the study area, are unlikely to be significant due to the increased viewing distance (over 20km) and limited nature of theoretical visibility;
- Residential receptors nearby, including residents of Glen Cassley, Strath Oykel and settlements including Rosehall and dispersed communities along the Kyle of Sutherland;

- Users of key routes throughout the LVIA study area, including the A839 and A837; and
- Recreational receptors e.g. those at recognised attractions; those at popular hill and mountain tops; and those on recognised walking routes including the Core Path network.

Cumulative landscape and visual effects arising through combined, successive and/or sequential interactions with other existing and proposed wind farms will be included in the assessment. A Residential Visual Amenity Assessment (RVAA), which considered effects on properties within 2.5km of the proposed turbines, will also be carried out. Landscape and visual effects in relation to the Solar PV Array will also be assessed. A solar PV search area ZTV has been prepared to accompany the scoping report. The actual footprint of the solar array area will be more refined for the S36 application.

Effects on LCT, designated landscapes, settlements and key routes, beyond 20 km, and landscape and visual receptors with limited/ no visibility of the Proposed Development, will be scoped out of the LVIA.

6.8 Opportunities for Enhancing the Environment

Opportunities for landscape mitigation, in the form of habitat enhancement, peat restoration and native woodland planting will also be explored.

6.9 Proposed Assessment Methodology

The design of the Proposed Development will aim to achieve a coherent and balanced turbine layout, in line with guidance provided by NatureScot. The objective in designing the Proposed Development will be to develop a wind turbine layout that responds to its setting in terms of landform and pattern, and which presents a simple visual image, avoiding the clustering of turbines and the isolation of outlying turbines in views from key locations. It is also recognised that the final layout will need to balance a wide range of technical and environmental considerations. The location and design of the solar PV array will also be carefully considered, seeking to minimise views of additional infrastructure in key views including from the nearby settlement of Rosehall. The search area for the solar PV array, and the corresponding zone of theoretical visibility when viewed from Rosehall, are shown in **Figures 6.6, 6.7a and 6.7b**.

All elements of the Proposed Development infrastructure will be considered in terms of locational and design choice, and the LVIA will set out how the design of ancillary elements has evolved to minimise visual effects, especially from nearby and sensitive visual receptors.

The primary guidance for LVIA is the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3). In addition, NatureScot (formerly Scottish Natural Heritage (SNH)) has published several documents that have been adopted as industry standard good practice for landscape and visual assessment of wind farm proposals.

The LVIA will consider direct and indirect effects on landscape resources, landscape character, and the implications for designated landscapes and wild land, and cumulative effects, i.e. the effects of the Proposed Development in an alternative theoretical future baseline which includes operational, consented and proposed wind farms. Scoping stage wind farms, within the more immediate context (10km) will also be considered. It will examine the nature and extent of effects arising from the introduction of the proposed turbines, as well as the solar PV array and ancillary infrastructure (i.e. BESS, access tracks, masts, transformers etc.) which will be assessed during both the construction and operational phases of the Proposed Development.

In accordance with GLVIA3, landscape and visual effects will be considered separately. GLVIA3 states that the nature of landscape and visual receptors, commonly referred to as their sensitivity, should be assessed in terms of the susceptibility of the receptor to change and the value attached to the existing landscape or views. The nature of the effect, commonly referred to as the magnitude of change, should be assessed in terms of the scale, geographical extent, duration and reversibility of the effect. These

criteria will all be considered to form a judgement regarding the overall significance of landscape and visual effects. **Effects of 'moderate' and above will be considered 'significant'.**

Given the potential for direct effects on the Reay - Cassley WLA and effects on certain perceptual qualities of the WLA, effects will be carefully explored, and a specific Wild Land Assessment prepared, in agreement with NatureScot.

In terms of visual amenity, representative viewpoints have been selected to cover local communities and key residential and transport receptors, including in Glen Cassley and Strath Oykel. Recreational receptors at key tourist assets and popular summits across the study area will be considered. The following list of assessment viewpoints is proposed (refer to **Figure 6.1**). Indicative wireline visualisations, which also show operational schemes in the more immediate context, have been provided for context (refer to **Appendix D**). We note that, following the pre-application meeting, THC have made a number of additional viewpoint requests. We shall consider these in the round with feedback from NatureScot and Mountaineering Scotland, before re-consulting to fix the final list of assessment viewpoints.

VP No.	Name	Grid ref	Approx. Distance from nearest proposed turbine	Reason for Selection
1	Rosehall	247311 902438	2.5 km	Represents views from nearest community. Propose to include as a night time viewpoint also.
2	Glencassley Castle	244164 907733	2.4 km	Represents recreational views near castle in Glen Cassley.
3	Altass	250226 900302	6.1 km	Represents residential views from settlement.
4	A839 Rosehall to Lairg	252104 901731	7.2 km	Represents views for road users on this key route.
5	Achnahanat	251121 898054	7.3 km	Represents residential views from settlement. Propose to include as a night time viewpoint also.
6	A837 North of Invershin	257681 896813	14.3 km	Represents views for road users on this key route.
7	Carn a Choin Deirg	239788 892449	12.1 km	Represents recreational views from summit.
8	Beinn Sgeireach	245358 911805	6.6 km	Represents recreational views from summit.
9	Ben More Assynt	231805 920127	18.5 km	Represents recreational views from summit.
10	Glen Cassley - Duchally Lodge	238690 916968	12.3 km	Represents views for recreational users of Glen Cassley. Propose to include as a night time viewpoint also.
11	Cadha Mor, B9176	265249 885796	26.8 km	Represents views from key route, which is also an OS promoted viewpoint.

				Given viewing distance and limited nature of visibility propose to include as wireline only visualisation.
12	Cul Mor	216225 911901	27.7 km	Represents recreational views from summit. Given viewing distance propose to include as wireline only visualisation.
13	A837 near Tuiteam Tarbhach	243049 901099	2.8 km	Represents views for road users on this key route.
14	Ben Klibreck	258517 929878	28.7 km	Represents recreational views from summit. Given viewing distance propose to include as wireline only visualisation.
15	Glen Rossal Estate Lodge House	246678 903636	1.6 km	Represents views from nearest property.

6.10 Limitations and Uncertainties

To ensure transparency within the EIA process, the following limitations and uncertainties have been identified:

- Cumulative data – cumulative information, to inform the cumulative LVIA, is subject to change. It is proposed to reconsult nearer design fix to 'fix' the scope of the cumulative assessment and confirm that the most up to date cumulative baseline information as possible is included.
- Residential Visual Amenity Assessment – in the interests of providing a focused assessment on properties where the 'residential visual amenity threshold' could potentially be breached, the RVAA will focus on properties within 2.5 km of the proposed turbines. For properties beyond 2.5 km from the proposed turbines, it is unlikely that the residential visual amenity threshold could be breached, based on the scale of turbine under consideration. Communities (rather than individual properties) beyond this distance will nevertheless be considered within the LVIA.
- Night time assessment viewpoints – we propose to reconsult to agree the night time assessment viewpoints. We propose to use the Rosehall (VP1), Achnahanat (VP5) and Glen Cassley – Duchally Lodge (VP10) as night time viewpoints, as these represent more accessible viewpoints, which are more likely to be frequented during the hours of darkness, and to avoid health and safety concerns around night time photography in remote locations.

6.11 References

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6.12 Key Questions for Consultees

- *Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, or to assess cumulative effects?*
- *Are there any comments on the proposed list of assessment viewpoint locations?*
- *Which viewpoints do you consider would be helpful to assess effects associated with aviation lighting?*
- *Are there any further viewpoints you wish us to consider to assess effects in relation to the solar PV array?*
- *Are there any further wind farm sites to those shown on **Figure 6.4**, or changes to project development status, which should be considered as part of the cumulative assessment?*
- *Has the consultee identified any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that likely significant effects may occur)?*
- *Are there any other relevant consultees who should be consulted with respect to the LVIA?*
- *Which wild land key attributes of the Reay - Cassley WLA require consideration in the wild land assessment?*

7 ECOLOGY

7.1 Consultation

Initial consultation has been undertaken with the following consultees in relation to the availability of existing information, the scope of baseline studies and initial concerns relating to the Proposed Development in relation to ecological interests:

- NatureScot;
- Highland Biological Recording Group (HBRG); and,
- The Kyle of Sutherland Fisheries Board and Trust.

No further consultation has been undertaken, but it is proposed that further consultation with THC will be undertaken.

NatureScot was consulted in June 2021 for pre-application advice on the scope of baseline ecological surveys required to inform the design and assessment of the Proposed Development. In their response (16th July 2021) NatureScot agreed with the scope of ecological surveys proposed and confirmed that it followed recommended guidance. They recommended consultation with other consultees for potentially relevant existing ecological information and a review of publicly available documentation for the nearby operational Achany and Rosehall wind farms.

NatureScot clarified that otter was a qualifying feature of the Caithness and Sutherland Peatlands Special Area of Conservation (SAC) and that peat and deer interests on the Site will require further assessment. They advised survey work will be required to assess the potential for direct and indirect effects upon the qualifying interests of the Caithness and Sutherland Peatlands SAC and River Oykel SAC, with potential impacts upon SAC habitats (such a blanket bog) comprising a key consideration for development. They acknowledged the potential of the Site to support European and nationally protected species (including, but not limited to otter, wildcat, bats, water vole, pine marten and badger) and advised that the presence of wildcat should be considered during survey work. NatureScot further advised that they would be happy to provide relevant developments to include in cumulative assessment.

It should be noted that the above consultation was based on a preliminary site boundary and which adjoined the Caithness and Sutherland Peatlands SAC and Ramsar site. The boundary has since been refined to the Site, with development proposed to the west of the River Cassley and approximately 2.5 km from the Caithness and Sutherland Peatlands SAC and Ramsar site boundary at its nearest point (see **Figure 2.3**). The River Oykel SAC (River Cassley section) adjoins the Site along its northern and eastern boundaries (see **Figure 2.3**).

In response to the consultation response received:

- The HBRG has been consulted for existing ecological information within proximity to the Proposed Development. Publicly available documentation for adjacent proposed, consented and/or operational wind farms, including the Achany and Rosehall wind farms, will also be reviewed.
- The Kyle of Sutherland Fisheries Board and Trust has also been consulted in relation for existing information concerning fish species and populations (and freshwater pearl mussel) within the River Cassley.
- A fish habitat survey, including habitat suitability assessment for freshwater pearl mussel, has been undertaken as part of EIA baseline characterisation. Further consultation with NatureScot is also proposed in relation to the knowledge and availability of freshwater pearl mussel records in proximity to the Proposed Development.
- Protected mammal surveys have been undertaken as part of EIA baseline characterisation and which have included survey for signs confirming and/or indicative of the presence of wildcat. Further consultation with Saving Wildcats is also proposed in relation to the knowledge and availability of wildcat records in proximity to the Proposed Development.

- Existing ecological information received will be reviewed to inform baseline ecological conditions, the requirement for additional surveys and change in the scope of subsequent assessment presented herein.
- **Chapter 9** of this Scoping Report provide details on the scope of baseline studies and potentially significant effects in relation to peat, peat soil, peatlands and Groundwater Dependent Terrestrial Ecosystems (GWDTEs).
- On account of spatial separation, embedded (primary) mitigation outlined in **Table 4.2** above and sensitively located and designed watercourse crossing(s), it is considered that the potential for significant adverse effects upon qualifying interests of statutory designated sites for nature conservation can be scoped out of detailed assessment within the EIA Report. A report to inform a Habitats Regulations Appraisal (HRA) will be submitted in support of the application and which will provide relevant information for the Competent Authority to enable a HRA of the Proposed Development in relation to the Caithness and Sutherland Peatlands SAC and Ramsar site and River Oykel SAC . The HRA report will include all details of those measures, where required, to avoid adverse effects upon the integrity of those European sites.
- The EIA Report will provide an assessment of the potential for impacts upon deer with reference to guidance (SNH, 2016). It is proposed that consultation will be undertaken with NatureScot to consider the scope of any such assessment.

Following receipt of scoping responses and in response to changes to scheme design, further consultation will be undertaken where required to refine the scope of baseline studies and assessment. Details of all consultations undertaken in relation to ecological interests will be presented in the EIA Report.

7.2 Study Area

Study areas for baseline ecological surveys were in accordance with current NatureScot guidance (2022):

- Habitats and Vegetation Surveys: Site + 250m (where access allowed) and also following SEPA guidance (2017);
- Protected Mammal Surveys: Site + 250 m (where access allowed) and following NatureScot guidance (2021a);
- Bat Activity Surveys Site: static detectors deployed as close as possible to proposed turbine locations and/or area of turbine interest and following NatureScot guidance (2021b) applicable at the time;
- Bat Roost Potential: Site + 200 m and blade length (*c*. 290 m; where access allows) for assessment of bat roost potential and following NatureScot guidance (2021b) applicable at the time; and
- Fish Habitat Survey: watercourses within and adjoining the Site, also in accordance with the Scottish Fisheries Coordination Centre (SFCC) guidance (2007).

Where required, study areas will be updated to account for any changes to scheme design and ensure baseline ecological information is collected in accordance with current industry guidance.

7.3 Data sources to Inform the EIA Baseline Characterisation

Key sources of existing ecological information will include, but may not be limited to:

- The HBRG[4];

[4] Records of protected/notable species and non-statutory sites within 2 km of the Site, extended to 6 km for records relating to bat roosts.

- Kyle of Sutherland Fisheries[5];
- Saving Scotland's Red Squirrels[6]; and
- Publicly available documentation for adjacent relevant wind farm schemes.

7.4 Surveys to Inform the EIA Baseline Characterisation

The following baseline ecological field surveys have been undertaken:

- Phase 1 habitat survey - July/August 2022;
- National Vegetation Classification (NVC) survey - July/August 2022;
- Protected mammal surveys[7] - August/September 2022;
- Bat activity surveys - summer and autumn 2022 and spring 2023; and
- Fish (and freshwater pearl mussel) habitat surveys - September 2022.

An ecological walkover survey has been undertaken of the potential access route to Site.

7.5 Baseline Conditions

The Site comprises upland areas of heath, bog and grassland habitats. The River Cassley (which forms part of the River Oykel SAC) flows along the northern and eastern boundary of the Site (**Figure 2.3**). The Caithness and Sutherland Peatlands SAC and Ramsar site (and the component Grudie Peatlands Site of Special Scientific Interest (SSSI)) lies approximately 2.5 km north-east of the Site at its closest point (**Figure 2.3**).

Habitat and vegetation surveys have recorded examples of Annex 1 habitats within the Site, including heath and bog communities (see **Figures 7.1a** and **7.1b**, respectively for the results of the Phase 1 habitat survey and NVC survey). However, across the Site heavy grazing by deer is evident and hagging appears common. Habitats recorded which are listed on the Scottish Biodiversity List (2020) are provided on **Figure 7.2**.

Protected mammal surveys undertaken have identified the presence of water vole in the west of the Site, with evidence of pine marten also recorded (see **Figure 7.3** for survey results).
Priority peatland habitats (in accordance with NatureScot guidance, 2023) recorded during surveys is shown in **Figure 7.4**.

Baseline ecological surveys (of the Site and access track) and appraisal of survey results are ongoing and full details will be presented within the EIA Report.

7.6 Additional (secondary and tertiary) Mitigation

The requirement for any additional (secondary or tertiary) mitigation measures in relation to ecological features will be identified through the design process.

Full details of embedded (primary) mitigation measures in relation to ecology will be detailed within the EIA Report.

[5] Fish and freshwater pearl mussel population records from River Cassley (and tributaries) within, and adjacent to, the Site.

[6] Red squirrel records at that locality.

[7] To include searching for evidence, or potential evidence, of water vole *Arvicola amphibius*, otter *Lutra lutra*, pine marten *Martes martes*, red squirrel *Sciurus vulgaris*, wildcat *Felis silvestris* and badger *Meles meles*.

7.7 Description of Likely Significant Effects

The assessment will consider the potential for the following main impacts on important ecological features as a result of the construction and operation of the Proposed Development:

- Designated Sites: including direct and indirect impacts to qualifying features;
- Habitats and Vegetation: including direct (i.e. derived from land-take from all infrastructure) and indirect effects (i.e. changes caused by effects to supporting systems such as groundwater or overland flow); and
- Protected species, such as bats : including direct (e.g. loss of life as a result of the Proposed Development; loss of key habitat; barrier effects preventing movement to/from key habitats; and general disturbance) and indirect effects (e.g. loss/changes of/to food resources; population fragmentation; degradation of key habitat as a result of pollution).

The EIA Report will also provide an assessment of the potential for impacts upon deer with reference to guidance (SNH, 2016).

Sources of impacts will be considered throughout the design process for the Proposed Development, and where possible will either be avoided through scheme design or will be prevented/minimised by standard good practice measures (see **Section 3.7**).

Potential effects upon peat, geology, soils and hydrology (including GWDTEs) will be considered separately, within Chapter 9 of the EIA Report. The potential effects upon forestry will also be considered separately within a standalone technical appendix relating to forestry which will be included in the EIA Report.

Chartered Institute of Ecological and Environmental Management (CIEEM) guidelines (2018) stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological features that are sufficiently widespread, unthreatened and/or resilient to impacts of a development proposal. NatureScot guidance (2022) similarly advises that there are some species (e.g. moths, invertebrates and amphibians), which with standard mitigation measures, are unlikely to experience significant environmental effects as a result of the construction and/or operation of onshore wind farms. This includes species that do not require surveys to inform an assessment of a development but may require appropriate mitigation to ensure legislative compliance.

Where on review of baseline information and considering potential pathways for effect, it is identified that ecological features are unlikely to be so important in the context of the Proposed Development as to warrant a detailed assessment or where they are unlikely to be significantly affected by either the construction or operation of the Proposed Development, it is proposed that these are 'scoped out' of further assessment. Mitigation measures for such features may however, still be outlined within the EIA Report where appropriate, to reduce and/or avoid any potentially adverse effects, or to ensure legislative compliance.

Designated Sites for Nature Conservation

The potential for direct and indirect effects upon ecological qualifying interests of any statutorily designated site for nature conservation located greater than 2 km from the Site, and for which embedded (primary) mitigation (**Section 3.7**) will be sufficient to prevent such significant effects, is proposed to be scoped out of detailed assessment within the EIA Report, by virtue of the spatial separation and/or absence of pathways for connectivity. The consideration of the potential for significant effects upon the ecological qualifying features of the following statutory designated sites is therefore scoped out of detailed assessment within the EIA Report:

- Caithness and Sutherland Peatlands SAC;
- Caithness and Sutherland Peatlands Ramsar site;
- Kyle of Sutherland Marshes SSSI; and
- Grudie Peatlands SSSI.

There are no non-statutory designated sites (local sites) identified within 2 km of the Site.

The consideration of the potential for significant effects upon the ecological qualifying features of the River Oykel SAC (Atlantic salmon and freshwater pearl mussel) are also proposed to be scoped out of

detailed assessment within the EIA Report. This is on the basis of embedded (primary) mitigation and good practice (including adoption of sensitive watercourse crossing design for any essential crossings) proposed in **Section 3.7** which is considered sufficient to prevent any significant effects from occurring on the SAC (or component SSSIs) during either construction or operation.

A report to inform a HRA will be submitted in support of the application and which will provide relevant information for the Competent Authority to enable an HRA of the Proposed Development in relation to the Caithness and Sutherland Peatlands SAC and Ramsar site and River Oykel SAC. The report will include all details of those measures, where required, to avoid adverse effects upon the integrity of those European sites.

The potential for impacts upon the above-mentioned designated sites for nature conservation and any additional statutory and non-statutory designated sites will be reviewed in consultation with NatureScot over the course of the EIA and in response to scheme design.

Habitats

The consideration of potentially significant effects within the EIA Report will be restricted to those important habitat features identified during baseline studies and comprising:

- Examples of Annex 1 habitats;
- Habitat types listed on the Scottish Biodiversity List (SBL) or Local Biodiversity Action Plan (LBAP); and/or
- Habitat types with the potential to represent GWDTE.

The assessment will be limited to the consideration of impacts during the construction stage of the Proposed Development. The potential for significant effects upon habitats during the operational stage of the Proposed Development are not considered to occur and will be scoped out of detailed assessment on the basis of measures to be contained within a Construction Environmental Management Plan (CEMP).

Impacts to common and widespread habitats of low sensitivity and/or conservation interest (those not categorised above), will be scoped out of detailed assessment within the EIA Report, but may be included as part of habitat management proposals.

Protected Species

Baseline ecological studies (for access track) have not yet concluded. However, on the basis of predominant habitats present within the Site (anticipation that there the project will aim to minimise loss of forested habitat) and the embedded (primary) mitigation proposed (see **Section 3.7**, including the avoidance and/or minimisation of watercourse crossings, and sensitive design of watercourse crossings for ecology), the potential for significant effects upon the following protected species will be avoided and/or minimised and therefore the consideration of effects upon such species are proposed to be scoped out of detailed assessment:

- Red squirrel;
- Pine marten;
- Wildcat;
- Badger;
- Otter;
- Water vole;
- Fish (including freshwater pearl mussel); and
- Roosting bats.

In accordance with NatureScot guidance (2022), providing the implementation of primary mitigation measures detailed in **Table 4.2** the potential for significant effects upon invertebrates, amphibians and reptiles are not considered likely to occur. Baseline studies for such species groups are therefore not proposed and the consideration of effects scoped out of detailed assessment.

No existing records of great crested newt were returned in consultation with the HBRG, and this part of Scotland is considered to be without the species known range. Baseline studies for great crested newt are therefore not proposed and the consideration of effects upon the species scoped out of detailed assessment.

Additional (secondary and tertiary) mitigation will be outlined within the EIA Report where required to ensure legislation compliance with regards the protection afforded to these species under the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended in Scotland), as relevant for example in relation to the identification of breeding sites and important habitat features over the course of baseline studies.

In the event impacts upon a protected species cannot be avoided, sufficient information will be provided within the EIA Report to demonstrate that the tests for a protected species licence can be met before an application is approved.

Where required Species Protection Plans (SPPs) will be presented within the Operational Management Plan (OMP).

The consideration of operational phase effects upon foraging and commuting bats are proposed to be scoped into detailed assessment.

The consideration of construction and operational phase effects upon Atlantic salmon and freshwater pearl mussel are proposed to be scoped out of detailed assessment, on the basis of measures to protect the aquatic environment contained within an CEMP.

The potential for effects upon the above-mentioned species will be reviewed in consultation with NatureScot over the course of the EIA, in response to scheme design and the completion of baseline studies.

7.8 Summary of Effects Scoped-in

On the basis of primary embedded mitigation, the following effects are proposed to be scoped into detailed assessment within the EIA Report:

Construction Phase

- Loss/deterioration of notable habitats (Annex 1, SBL, LBAP and potential GWDTEs).

Operational Phase

- Collision mortality risks (and barotrauma) to bat species.

A report to inform a HRA will be submitted in support of the application, and which will provide relevant information for the Competent Authority to enable a HRA of the Proposed Development in relation to the Caithness and Sutherland Peatlands SAC and Ramsar site and River Oykel SAC . The report will include all details of those measures, where required, to avoid adverse effects upon the integrity of those European sites.

The EIA Report will also provide an assessment of the potential for impacts upon deer with reference to current guidance (SNH, 2016).

Ecological effects scoped into detailed assessment will be reviewed in consultation with NatureScot, over the course of the EIA, in response to scheme design and the completion of baseline studies.

Full details of baseline studies and consultations will be presented within the EIA Report.

7.9 Opportunities for Enhancing the Environment

Suitable principles for ecological enhancement to be delivered as part of the Proposed Development will be outlined within the EIA Report and will be underpinned by Policy 3 of NPF4 to deliver positive biodiversity effects from the proposed development. Measures will include peatland restoration, which will also support Policy 5 of NPF4. Based on the currently published and applicable guidance, measures to be adopted for peatland restoration/enhancement will be in accordance with NatureScot guidance (2023) and is likely to include peatland enhancement to compensate for the loss of any priority peatland habitats by the project.

The appropriateness and feasibility of principles will be discussed with NatureScot and other relevant consultees over the course of the EIA, with a view to prescriptive enhancement measures being detailed

post-consent, within an OBEMP (or similar) for the Proposed Development. The SNH guidance (2016) will also be considered for the production of an OBEMP (or similar).

The BEMP will be finalised in consultation with NatureScot and other relevant consultees on the basis of an OBEMP (or similar) presented as part of the EIA Report, by way of planning condition.

7.10 Proposed Assessment Methodology

Impact assessment presented within the EIA Report for ecological features will follow current CIEEM) guidelines (2018).

The assessment process will include the following stages:

- determination and evaluation of important ecological features;
- identification and characterisation of impacts;
- outline of additional (secondary and tertiary) mitigation measures to avoid and reduce significant effects;
- assessment of the significance of any residual effects after such additional mitigation measures;
- identification of appropriate compensation measures to offset significant residual effects; and
- identification of opportunities for ecological enhancement.

The EIA Report will be supported by technical appendices and relevant figures, which will provide full details of desk studies, consultations and field surveys undertaken to inform the design and assessment of the Proposed Development.

Ecological data considered sensitive (e.g. that pertaining to the breeding and/or resting places of protected species) will be included within a confidential appendix to the EIA Report. This will not be made publicly available but will be issued to the ECU, NatureScot and THC.

Sufficient information will be presented within the EIA Report to allow an objective and robust assessment of potentially significant adverse effects upon important ecological features to take place.

Determining Importance

Relevant European, national and local legislation policy and guidance will be referred to in order to determine the importance (or 'sensitivity') of ecological features. In addition, importance will also be determined using professional judgement, specialist consultation advice, and the results of baseline surveys and the importance of features within the context of the geographical area.

Importance will not necessarily relate solely to the level of legal protection that a feature receives and ecological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

The importance of ecological features will be defined in a geographical context from "Local" to "International".

Identification and Characterisation of Impacts

The identification and characterisation of impacts on important ecological features will be undertaken in accordance with the CIEEM guidelines (2018) with reference made to magnitude (e.g. area or number of individuals to be impacted), extent, duration and reversibility as appropriate.

Impacts will be considered during the construction and operational phase will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

Significant Effects

CIEEM guidelines (2018) define a 'significant effect' as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general.

CIEEM guidelines (2018) on ecological impact assessment note that "*A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures as long as the mitigation hierarchy has been applied effectively as part of the decision-making process*."

Potentially significant effects identified will be expressed with reference to an appropriate geographic scale. For example, a significant effect on a nationally designated site is likely to be of national significance. However, the scale of significance does not necessarily always relate to the importance of an ecological feature. For example, an effect on a species which is considered of national importance, may not have a significant effect upon its national population.

In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect will be assumed as a precautionary approach. Where uncertainty exists, this will be acknowledged.

Cumulative Impacts

The potential for cumulative impacts on ecology features with other wind farm proposals will be assessed in accordance with current guidance (SNH, 2012) but with regards ecological features will be restricted to those developments located within the same hydrological catchment(s) or within the regular range of mobile species (e.g. bats) up to 10 km from the Site.

The assessment will encompass the effects of the proposal in-combination with existing developments, either built or under construction; approved developments, awaiting implementation; and, proposals awaiting determination within the planning process with design information in the public domain.

The inclusion of additional specific non-wind farm proposals will also be included upon request from NatureScot.

7.11 Limitations and Uncertainties

At this stage, the requirement for watercourse crossings within the Site and over the River Cassley (forming part of the River Oykel SAC), together with the presence and/or suitability of watercourses to support Atlantic salmon and freshwater pearl mussel, is unknown.

The Kyle of Sutherland Fisheries Board and Trust has been consulted in relation to existing information on Atlantic salmon and freshwater pearl mussel for watercourses on, and adjoining, the Site.

A fish habitat survey will also be undertaken of the River Cassley at the point of any crossing , to establish habitat suitability and inform the requirement for further surveys.

The results of the desk study and field survey information will provide baseline information to inform a HRA with regards to the River Oykel SAC.

No difficulties or uncertainties have been experienced to date in the undertaking of baseline studies. Should any arise during the remainder of the baseline studies, these will be acknowledged and addressed within the EIA Report with further advice sought from NatureScot where necessary.

7.12 References

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- CIEEM (2018), Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, freshwater, coastal and marine. September 2018, version 1.2 – updated April 2022. https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf
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- Scottish Government (2013), The Scottish Biodiversity List (SBL)
- Scottish Renewables *et al.* (2019), Good Practice During Wind Farm Construction (Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AECoW 2019)
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- SFCC (2007), Habitat Surveys Training Course Manual. Scottish Fisheries Co-ordination Centre, Pitlochry
- SNH (2012), Assessing the Cumulative Impact of Onshore Wind Energy Developments. Scottish Natural Heritage, Inverness
- SNH (2016), Planning for development: What to consider and include in Habitat Management Plans.

7.13 Key Questions for Consultees

- *Are there any other key stakeholders or stakeholder organisations that should be consulted?*
- *Do you agree with the proposed study area(s)?*
- *Do consultees agree with the list of existing data sources which will be used to inform baseline ecological conditions, or can they advise on any additional key sources that should be consulted?*
- *Do you agree with the scope of ecological field surveys proposed to inform baseline conditions?*
- *Do consultees agree that all potential impacts on ecological features have been identified?*
- *Do consultees agree with the ecological features and impacts that are proposed to be scoped in (and out) of the EIA, based on the current information?*
- *Do consultees agree with the proposed assessment approach?*

- *Do consultees agree with the proposed cumulative assessment approach? Can consultees provide a list of those specific developments that should be considered in the cumulative assessment?*
- *Do NatureScot hold any records in this area relating to:*
    - *Freshwater pearl mussels?*
    - *Wildcats?*

8 ORNITHOLOGY

8.1 Consultation

Initial consultation has been undertaken with the following consultees in relation to the availability of existing information, the scope of baseline studies and initial concerns relating to the Proposed Development in relation to ecological interests:

- NatureScot;
- Highland Biological Recording Group (HBRG); and,
- The Highland Raptor Study Group (HRSG).

No further consultation has been undertaken, but it is proposed that consultation with THC and RSPB Scotland will be undertaken.

NatureScot was consulted in June 2021 for pre-application advice on the scope of ornithological surveys to inform the design and assessment of the Proposed Development.

In their response (16th July 2021) NatureScot agreed with the scope of surveys proposed and confirmed that it followed recommended guidance. They advised that a minimum of two years of ornithological surveys is required due to the proximity of the Site to the Caithness and Sutherland Peatlands Special Protection Area (SPA) and Ramsar site. They advised that a thorough assessment of potential impacts to the SPA/Ramsar site as a result of collision risks and disturbance/displacement resulting from the Proposed Development alone and cumulatively with other developments affecting the SPA/Ramsar site will be required as part of any future planning application.

Due to the close proximity of the SPA and Ramsar site, NatureScot advised that all qualifying interests of the designations should be included as target species for survey. They advised that golden eagle may nest locally and common scoter has been recorded in the wider area and wider countryside species (including white-tailed eagle and osprey) should also be considered and included as target species. They advised consultation should be undertaken with specialist recording groups including RSPB and the Scottish Raptor Study Group and that post-construction monitoring data may be available from the nearby operational Achany and Rosehall wind farms. NatureScot also provided advice and comment on Vantage Point (VP) viewshed coverage and acknowledged there were some gaps. NatureScot further advised that they would be happy to provide relevant developments to include in cumulative assessment.

It should be noted that the above consultation was based on an earlier site boundary and which adjoined the Caithness and Sutherland Peatlands SPA and Ramsar site. The Site boundary has since been refined and is now located approximately 2.5 km from the SPA and Ramsar site (see **Figure 2.3**), at its closest point, which is within the documented foraging range of some qualifying species of the SPA, such as golden eagle and divers (in accordance with SNH guidance, 2016).

In response to the consultation response received:

- Two years of ornithological survey will be undertaken to inform the design and assessment of the Proposed Development.
- The potential for effects upon qualifying ornithological interests of the Caithness and Sutherland SPA/Ramsar site will be considered in the assessment for those ornithological interests whose documented foraging distances (SNH, 2016) are greater than 2.5 km. A report to inform an HRA will be submitted in support of the application for consent.
- Potential effects on bird species not comprising qualifying interests of the Caithness and Sutherland SPA/Ramsar site, and also those qualifying interests of the SPA/Ramsar species with a documented foraging range of less than 2.5 km (SNH, 2016), will be assessed in the context of 'wider countryside' populations i.e. at the relevant Natural Heritage Zone (NHZ) population level ('Northern Highlands' NHZ).
- Target species identified for survey and recording include all qualifying ornithological interests of the Caithness and Sutherland Peatlands SPA/Ramsar site in addition to those species listed on

Annex 1 'Priority bird species for assessment when considering the development of onshore wind farms in Scotland' from SNH guidance (2018).

- RSPB, the HRSG and the HBRG have been contacted for existing ornithological information. Publicly available documented for the above-named wind farms will also be reviewed to inform baseline ornithological conditions.
- Some small gaps in viewshed coverage of the recommended survey area within which to record species flight activity in accordance with SNH guidance (2017) are identified as shown in **Figure 8.1**. All proposed turbine locations are adequately covered by viewsheds of VP locations used during baseline survey coverage and as such is not considered a limitation in the identification of "at collision risk" flight activity and subsequent estimation of collision mortality risks for subsequent assessment.

8.2 Study Area

Study areas used for baseline ornithology surveys are in accordance with current guidance (SNH, 2017) and have been agreed through consultation with NatureScot:

- Site + 500 m for Moorland Breeding Bird Surveys (MBBS);
- Site + 2 km (extended to 6 km for eagles) for Schedule 1 breeding raptor and owl searches;
- Site + 1.5 km for breeding black grouse searches;
- Site + 1 km for breeding diver searches; and
- Indicative turbine locations and 500 m for VP flight activity surveys.

Figure 8.1 shows the VP locations (with grid references) used and modelled viewshed coverage. Modelled coverage is based on an observer height of 1 m and 20 m above ground offset.

8.3 Data sources to Inform the EIA Baseline Characterisation

Key sources of existing ornithological information will include:

- The HRSG[8];
- RSPB[9];
- The HBRG[10]; and
- Publicly available documentation for adjacent relevant wind farm developments.

8.4 Surveys to Inform the EIA Baseline Characterisation

The following baseline ornithological surveys have been undertaken in accordance with current guidance (SNH, 2017) and following agreement with NatureScot:

- MBBS (April to July 2021 and 2022) following amended Brown and Shepherd methodology (1993);
- Schedule 1 breeding raptor and owl searches (April to August 2021 and 2022) following species-specific methodologies in Hardey *et al.* (2013);

[8] Records of protected/notable ornithology species within 2 km of the Site, extended to 6 km for eagle records.

[9] Records of ornithology species within 6 km of approximate central grid reference of the Site at that time (NC 44885 05484), extended to 10 km for eagle records.

[10] Records of protected/notable ornithology species within 2 km of the Site, extended to 6 km for Annex 1 and Schedule 1 raptors.

- Breeding black grouse searches (April and May in 2021 and 2022), following the methodology in Gilbert *et al.* (1998);
- Breeding diver searches (April to July in 2021 and 2022), following the methodology in Gilbert *et al.* (1998); and
- VP flight activity surveys (April 2021 to March 2023)[11].

No other additional surveys are proposed to inform the design and assessment of the Proposed Development.

8.5 Baseline Conditions

The Site comprises an upland area of heath, bog and grassland habitats. The Caithness and Sutherland Peatlands SPA and Ramsar lies approximately 2.5 km north-east of the Site at its closest point (**Figure 2.3).**

Ornithological surveys identified that the Site and immediate surrounds supports a ground-nesting breeding bird assemblage including golden plover, greenshank, dunlin, snipe, curlew and black grouse.

No evidence of breeding Annex 1/Schedule 1 raptors and owl species were recorded within the Site. However, breeding evidence of white-tailed eagle and osprey was recorded within 6 km of the Site and a single golden eagle territory is understood to be present within 10 km of the Site.

No evidence of breeding red-throated, black-throated diver or common scoter was recorded at suitable waterbodies within 1 km of the Site. A pair of black-throated divers were incidentally recorded on a lochan within 3 km of the Site in April 2022, but no evidence to suggest the pair nested or bred successfully was subsequently recorded. No red-throated or black-throated diver flight activity was recorded through the Site during VP flight activity surveys.

VP flight activity surveys recorded moderate levels of flight activity, with golden eagle, golden plover, pink-footed goose and white-tailed eagle some of the most regularly recorded species.

8.6 Additional (secondary and tertiary) Mitigation

The requirement for any additional (secondary or tertiary) mitigation measures in relation to ornithological features will be further identified through the design process.

8.7 Description of Likely Significant Effects

The assessment will consider the potential for the following main impacts upon important ornithological features:

- Collision mortality risk; and
- Disturbance/Displacement.

Such effects will be assessed for the construction and operational stages of the Proposed Development, and in-combination with other relevant developments.

Embedded (primary) mitigation measures will avoid the potential for significant direct habitat loss effects for ornithological features. Direct habitat losses upon ornithological features are therefore scoped out of detailed assessment within the EIA Report.

The CIEEM guidelines (2018) stipulate that it is not necessary to carry out a detailed assessment of impacts upon ornithological features that are sufficiently widespread, unthreatened and/or resilient to impacts of a development proposal. NatureScot guidance (2022) similarly advises that there are some

[11] With a total of 78 – 84 hrs undertaken per VP per year, weighted towards the breeding season (April-July).

species, which with standard mitigation measures are unlikely to experience a significant environmental effect as a result of the construction and/or operation of onshore wind farms. This includes species that do not require surveys to inform the EIA but may require appropriate mitigation to ensure legislative compliance, such as breeding passerine species.

As such, the assessment within the EIA Report will be restricted to consideration of the effects upon designated sites for nature conservation and ornithological features which are considered 'important' on the basis of relevant guidance and professional judgement.

Where ornithological features are unlikely to be so important in the context of the Proposed Development as to warrant a detailed assessment or where they are unlikely to be significantly affected by either the construction or operation of the Proposed Development, it is proposed that these are 'scoped out' of further assessment. Mitigation measures for such features may, however, still be outlined as appropriate within the EIA Report to reduce and/or avoid any potentially adverse effects or to ensure legislative compliance.

Construction

During construction of the Proposed Development, in the absence of additional (secondary and tertiary) mitigation, effects upon ornithological interests may result from disturbance to and loss of nest sites, eggs and/or dependent young.

Such effects are predicted to result from a temporary increase in noise, vibration and human presence within construction areas. This has the potential to displace birds from the vicinity of construction areas for the duration of construction works.

Effects are likely to be greatest during the breeding season (generally between March and August, depending upon the species), but are considerably variable between sites and species.

Overall, construction disturbance is considered temporary and would occur only when construction activities are taking place. Furthermore, construction is not expected to take place over the entire Site, but within defined working areas, phased over small areas.

Operation

The operation of turbines and maintenance activities has the potential to cause disturbance/displacement of bird species over the course of the Proposed Development's operational lifetime.

The potential extent of displacement would be highly variable between species and species-group and therefore a species-specific assessment will take place on the basis of baseline studies.

The potential for significant displacement effects to golden eagle will be assessed using the Golden Eagle Topographical (GET) model (Fielding *et al*, 2019).

The risk of avian mortality resulting from the collision of birds with the turbine blades (or additional wind farm infrastructure) is also acknowledged to be higher for some species due to their biometrics and flight behaviour. The likelihood of collision is also likely to be influenced by the habitats present within the Site and the surrounding environment.

Where required, a detailed assessment of collision mortality risk will be provided following the NatureScot Collision Risk Model (CRM) or Band Model in accordance with current guidance (Band et al., 2007; SNH, 2000).

The potential for individual turbines to result in significant collision mortality risks at a species regional population level will be considered throughout the design process for the Proposed Development and, where possible, will be avoided through sensitive scheme design and/or minimised via good practice embedded (primary) mitigation measures to be included in the Proposed Development from the outset and detailed within the EIA Report.

Designated Sites for Nature Conservation

The potential for effects upon ornithological qualifying interests of a statutorily designated site for nature conservation will be considered on the basis of documented foraging distances within current guidance (SNH, 2016).

As such, the potential impacts on ornithological interests of the Caithness and Sutherland Peatlands SPA/Ramsar site as a result of the construction (disturbance/displacement) and operation (disturbance/displacement and collision risk) of the Proposed Development will be considered for those interests whose documented foraging distances (SNH, 2016) are greater than 2.5 km and which have been recorded during baseline surveys. Potential for impacts will also be assessed on the component

Grudie Peatlands SSSI adopting a similar approach. A report to inform a HRA will be submitted in support of the application for consent.

The potential for impacts upon any additional statutory and non-statutory designated sites is considered unlikely, but will be reviewed over the course of the EIA and in consultation with NatureScot.

Species

Based on the results of baseline ornithological surveys and consultations to date, the assessment presented within the EIA Report will consider the potential for significant effects upon the following species:

- Black grouse (lekking);
- Golden plover (breeding);
- Greenshank (breeding);
- Dunlin (breeding);
- Snipe (breeding);
- Curlew (breeding);
- Osprey (breeding);
- Golden eagle (resident);
- White-tailed eagle (resident); and
- Pink-footed goose (non-breeding).

The potential for significant effects as a result of collision mortality (operational phase) and/or disturbance/displacement (construction and operational phases) for the above listed species will be assessed.

The number and frequency of records of the other identified target species has been low to date and suitable breeding habitat for such species is either restricted or absent within the Site.

The Proposed Development is therefore unlikely to result in potentially significant disturbance/displacement effects to the following species:

- Breeding red-throated and black-throated divers;
- All other qualifying species of the Caithness and Sutherland Peatlands SPA and Ramsar (incl. merlin);
- Hobby;
- Goshawk; and
- All other wetland species (incl. greylag goose, whooper swan, oystercatcher and goosander).

It is proposed that disturbance to/displacement of these species is therefore scoped out of further assessment, provided there is no change to the baseline conditions between now and the submission of the application for consent.

An estimation of collision mortality risks will be undertaken for any of these species that meet the criteria of greater than three “at collision risk” flights (or greater than 20 birds) and to identify the potential for significant collision risks for such species at the relevant NHZ population level.

Species which are not recorded at the Site, are not sensitive to wind farm developments and/or for which there is no suitable habitat present within the Site will be scoped out of further assessment. This will include passerines and common and widespread (non-Schedule 1) raptors.

8.8 Opportunities for Enhancing the Environment

Actions using established principles for ornithological enhancement to be delivered as part of the Proposed Development will be outlined within the EIA Report. The appropriateness and feasibility of principles will be discussed with NatureScot and other relevant consultees over the course of the EIA, with a view to prescriptive enhancement measures being detailed post-consent, within an OBEMP) (or

similar). Enhancement measures will be underpinned by Policy 3 of NPF4 to deliver positive biodiversity effects from the Proposed Development.

An OBEMP (or similar) will be presented as part of the EIA Report.

8.9 Proposed Assessment Methodology

Impact assessment presented within the EIA Report for ornithological features will be based on current CIEEM guidelines (2018) and SNH guidance (2018a).

The assessment process will include the following stages:

- determination and evaluation of important ornithological features;
- identification and characterisation of impacts;
- outline of additional (secondary and tertiary) mitigating measures to avoid and reduce significant impacts;
- assessment of the significance of any residual effects after such additional mitigation measures;
- identification of appropriate compensation measures to offset significant residual effects; and
- identification of opportunities for ornithological enhancement.

The EIA Report will be supported by technical appendices and relevant figures, which will provide full details of desk studies, consultations and field surveys undertaken to inform the design and assessment of the Proposed Development.

Ornithological data considered sensitive (e.g. that pertaining to the nesting places of Schedule 1 species and black grouse lek sites) will be included within a confidential appendix to the EIA Report. This will not be made publicly available but will be issued to the ECU, NatureScot and THC.

The approach to assessment will take account of existing guidance and published scientific literature in relation to birds and wind farm, together with professional judgement and experience of wind farm EIA.

Determining Importance

Relevant European, national and local legislation policy and guidance will be referred to in order to determine the importance (or 'sensitivity') of ornithological features. In addition, importance will also be determined using professional judgement, specialist consultation advice and the results of baseline surveys and the importance of features within the context of the geographical area.

Important ornithological features will broadly include:

- species listed on Annex 1 of the Birds Directive;
- species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended in Scotland); and,
- 'Priority bird species for assessment when considering the development of onshore wind farms in Scotland' as listed on Annex 1 of current guidance (SNH, 2018a).

Importance will not necessarily relate solely to the level of legal protection that a feature receives and ornithological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

The importance of ornithological features will be defined in a geographical context from "Local" to "International".

Identification and Characterisation of Impacts

The identification and characterisation of impacts on important ornithological feature will be undertaken in accordance with the CIEEM guidelines (2018) with reference made to magnitude (e.g. area or number of individuals to be impacted), extent, duration and reversibility as appropriate.

Impacts will be considered during the construction and operational phases and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

Significant Effects

For the purposes of assessment, the significance of effects will primarily be expressed within the EIA Report with reference to the regional, national or international scale (as relevant) in line with NatureScot's interests of bird species status at wider spatial levels. The significance of effects at a local scale may also be assessed where sufficient information allows a meaningful assessment.

The assessment of effects will be undertaken taking into consideration collated field survey information and information available from the desk study. Bird flight activity data will be collated and analysed to assess the potential collision mortality risk to individual species (as relevant), following the method described by Band *et al.* (2007).

In order to assess the significance, population information will be collated on relevant regional and national scales, where available. A precautionary approach on the basis of uncertainty will be adopted.

Cumulative Impacts

Cumulative impacts will be assessed with reference to SNH guidance (2012 and 2018b) for all ornithological features subject to a detailed assessment. The potential for significant cumulative effects due disturbance/displacement and collision risk mortality will be assessed. The assessment will be based on the consideration of residual effects i.e. assuming that proposed additional (secondary and tertiary) mitigation and compensation measures (where relevant) are implemented.

The inclusion of additional specific non-wind farm proposals will also be included upon request from relevant consultees.

With regard to the spatial extent of the cumulative assessment, SNH guidance (2012 and 2018b) stipulates that cumulative effects should typically be assessed at the relevant NHZ scale, unless there is a reasonable alternative. The Proposed Development is located within the Northern Highlands NHZ (Wilson et al., 2015). It is therefore proposed that where the availability of relevant information is sufficient to allow for a meaningful cumulative assessment at the Northern Highlands NHZ scale to be undertaken, this will be done.

SNH guidance (2012) does however recognise that access to relevant data for other developments may be limited and therefore a meaningful assessment of cumulative effects of such developments is not always possible. As such, an alternative approach is primarily proposed, whereby the core foraging range for each species requiring consideration will be used to determine the spatial extent of the cumulative assessment, adopting a precautionary approach as necessary.

Core foraging ranges will be primarily taken from SNH guidance (2016).

8.10 Limitations and Uncertainties

At this stage a detailed analyses of the potential for collision risks and disturbance/displacement impacts to golden eagle has not been undertaken. Collision risks will be estimated using the NatureScot CRM or Band Model and the potential for habitat loss as a result of operational disturbance/displacement will be assessed using the GET model (Fielding *et al*., 2019). Following consultation with the HRSG, golden eagles recorded during baseline surveys are considered to be associated with the nearest known breeding territory and which is located outwith the Caithness and Sutherland Peatlands SPA, some distance to the north of the Proposed Development. The assessment of the Proposed Development will therefore consider the potential for impacts upon golden eagles as part of this identified territory and therefore as part of the species 'wider countryside' NHZ population. Likely significant effects upon golden eagle as a qualifying interest of the Caithness and Sutherland Peatlands SPA are therefore scoped out of the assessment on this basis. Details of information obtained from the HRSG will be presented within the EIA Report.

In April 2022, access was not permitted to Glencassley Estate to the north of the Site. This meant that during MBBS, raptor searches, black grouse searches and breeding diver searches on the Glencassley Estate could not be accessed during the middle and latter part of the bird breeding season. This is not considered a substantive limitation given the area is outside the Site and thus outside the main area of focus of study. Access outside the Site to other areas within study area buffers for surveys was restricted to public rights of way and roads. The buffers were sufficiently covered during surveys so no notable limitations for assessment are considered to have arisen.

There are minor gaps in VP coverage of the VP study area (turbines plus 500 m of outermost turbines) which is common in undulating areas. All proposed turbine locations are however covered by viewsheds shown at 20 m above the ground; any further limitations regarding viewshed coverage on final proposed turbine locations will be acknowledged and discussed in the EIA Report. Therefore, there are not considered to be substantive limitations regarding VP viewshed coverage.

There have been no further difficulties or issues with the gathering of ornithological data (from surveys and desk study sources) to date. Should any arise during the remainder of the baseline information gathering, these will be acknowledged and addressed within the EIA Report with further advice sought from NatureScot where necessary.

8.11 References

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8.12 Key Questions for Consultees

- *Are there any other key stakeholders or stakeholder organisations that should be consulted?*

- *Do you agree with the proposed study area(s) for each survey type?*
- *Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?*
- *Are there any additional data sources or guidance documents that should be considered?*
- *Do you agree that the ornithology surveys proposed to inform the EIA baseline characterisation are appropriate?*
- *Do you agree that all potential impacts on ornithological receptors have been identified?*
- *Do you agree with the ornithological receptors that are proposed to be scoped in (and out) of the EIA, given the available evidence gathered to date?*
- *Do NatureScot agree with using greater than 3 at-risk flights (or 20 birds) as an appropriate criterion for warranting CRM for each target species?*
- *Do you agree with the proposed assessment approach?*
- *Do you agree with the proposed cumulative assessment approach?*
- *Can NatureScot or RSPB Scotland provide any up-to-date population numbers of qualifying species of the Caithness and Sutherland Peatlands SPA and Ramsar to inform assessment?*
- *Can NatureScot provide a list of those wind farm developments within the Northern Highlands NHZ which should be considered within the assessment? Can NatureScot provide a list of acceptive cumulative collision risks for qualifying interests the Caithness and Sutherland Peatlands SPA and for ornithological species listed in Annex 1 of their guidance (NatureScot, 2018) for those wind farm developments within the Northern Highlands NHZ?*
- *Can consultees provide and/or advise of contact details from which to obtain ornithological operational monitoring results from the Achany and Rosehall wind farms to inform baseline ornithological conditions?*

9 HYDROLOGY, HYDROGEOLOGY, GEOLOGY AND PEAT

9.1 Consultation

Initial consultation has been undertaken with THC via their pre-application consultation process. This includes consultation responses from NatureScot and SEPA. Additional consultation has been undertaken with NatureScot.

The following key concerns have been raised:

- Potential for impacts on Caithness and Sutherland Peatlands SAC and Grudie Peatlands SSSI, notably blanket bog;
- Potential for impacts on the River Oykel SAC, notably indirect impacts via changes to water quality;
- Potential for impacts on the peat, peatland habitats and carbon-rich soils, notably the Class 1 and Class 2 peatland areas within the Site; and
- Flood risk needs to be taken into account, including changes to flood risk elsewhere.

The following elements are noted to be requirements of the submission:

- A peat depth survey, peat slide risk assessment and peat management plan, plus a detailed map of peat depths across the site;
- Clear demonstration of how the layout has been designed to minimise disturbance of peat;
- Outline preventative measures to avoid significant drying or oxidation of peat;
- Calculations of peat excavation and reuse volumes;
- Flood risk and drainage impact assessment;
- Assessment of impacts to groundwater-dependent terrestrial ecosystems (GWDTE);
- Assessment of impacts to private water supplies (PWS) including pipework;
- Pollution prevention measures; and
- Proposals for borrow pits including pollution management and dewatering.

The noted intention to undertake peat restoration is welcomed.

No additional consultation has been undertaken to date. However, consultations will be undertaken with the following stakeholders and organisations:

- Scottish Water;
- The Scottish Government's Energy Consents Unit (ECU); and
- Local landowners.

It is anticipated that further consultation with THC, SEPA and NatureScot will be required.

9.2 Study Area

The area assessed will include the proposed Site boundary plus a buffer zone of 2 km. For hydrological receptors, impacts downstream up to 5 km from the Site boundary will also be considered, as impacts such as pollution events can be transmitted downstream for greater distances than 2 km.

9.3 Data sources to Inform the EIA Baseline Characterisation

The assessment will involve a desk study, to gather available data concerning the existing geological hydrogeological, hydrological and soil/peat conditions within the study area. Datasets anticipated to be used include:

- Geological maps, including both bedrock and superficial geology;
- Hydrogeological maps, including productivity and groundwater vulnerability;
- Soil Survey of Scotland maps; including Carbon and Peatland mapping;
- High-resolution aerial or satellite imagery of the Site and its immediate surroundings;
- SEPA water quality and flood risk data for the Site;
- Vegetation mapping and the Functional Wetland Typology for Scotland;
- Borehole records, where available. These will be sourced from records held by the British Geological Survey (BGS) and other sources as available;
- Local authority private water supply records;
- Any available utilities and Scottish Water investigations and details of public water supplies and assets;
- Previous assessments carried out in relation to neighbouring wind farm projects and previous studies undertaken within the Site; and
- Data gathered from site visits, including peat depth and vegetation surveys and any material arising from future surveys that may be relevant.

9.4 Surveys to inform the EIA baseline characterisation

Phase 1 peat depth data from the Site has been provided.

Planned surveys to inform the EIA assessment are:

- A hydrological and geological walkover survey to obtain site-specific detail on ground conditions and water environment features within the Site and immediate surroundings, including NVC communities identified as potential GWDTE; and
- A Phase 2 peat survey focusing on locations where infrastructure is proposed.

9.5 Baseline Conditions

Geology

The Site is underlain by bedrock from the Altnaharra Psammite Formation, part of the Morar Group, consisting mainly of siliceous and micaceous psammites (BGS, 2022).

Two compression (thrust) faults are present in the area, oriented north-west to south-east. These are part of a wider regional fault structure.

The superficial geology consists mainly of peat and diamicton till, with the peat mainly in the western and south-western part of the Site. Alluvium deposits are present along the River Cassley (BGS, 2022).

No areas of current or historic mineral extraction are identified within the Site.

Soils and peat

Site soils are dominated by peat, peaty gleys and peaty podzols. An area of blanket peat has been identified in the western part of the Site (Scotland's Soils, 1981).

The Site is mainly considered to be Class 2 peatland with an area of Class 1 peatland in the western and central sections. Classes 1 and 2 peatland are considered to be peatland of national importance

(Scotland's Soils, 2016). Some areas of Classes 3 and 5 are also present. The areas of Class 1 and 2 peatland are shown on **Figure 2.3**.

Hydrogeology

The bedrock at the Site is classed as a low productivity aquifer with flow principally in fractures and discontinuities (Scotland's Environment, 2022). BGS GeoIndex (BGS, 2022) indicates that the bedrock is impermeable and largely without groundwater except at shallow depth.

There are two groundwater bodies (GWB) associated with the Site: The Northern Highlands GWB and the Oykel Sand and Gravel GWB. Both are considered to be of good overall status in terms of water flow, levels and quality (SEPA, 2015).

Groundwater-dependent terrestrial ecosystems

GWDTE are areas of wetland or marshy ground that are dependent on groundwater to maintain their function as a wetland or marsh area. Although vegetation mapping is not currently available for the study area, potential GWDTE have been identified in similar habitats on other sites. There is therefore potential for GWDTE to be present within the study area.

Designated sites

NatureScot (2022) indicates that there are four designated sites within 5 km of the Site that have been designated for reasons associated with geology, hydrogeology, hydrology or peat, plus one non-designated protected area. A risk screening will be undertaken to determine if there is any linkage between the Site and these designated areas. The sites are:

- Caithness and Sutherland Peatlands Ramsar, SAC, and Grudie Peatlands SSSI;
- River Oykel SAC;
- Kyle of Sutherland Marshes SSSI;
- Oykel Gorge SSSI; and
- Oykel Bridge Geological Conservation Review site (GCR).

Hydrology

The Site lies entirely within the River Oykel catchment. Within the Site, two main tributaries to the Oykel are present: the River Cassley, along the north-eastern Site boundary, and the Tutim Burn approximately 500 m south-east of the southern Site boundary. Both join the River Oykel downstream of the Site. Drainage within the Site boundary is provided by a number of tributaries to the River Cassley and Tutim Burn, including the Allt an Tuir.

SEPA's Water Environment Hub (SEPA, 2023a) indicates that the River Oykel has good overall status and good water quality status.

Private water supply

THC's private water supply (PWS) database indicates that there are no PWSs within the Site boundary. There are four PWS within 2 km and a further two PWS within 5 km of the Site boundary. The nearest, to the Site boundary, PWS are shown on **Figure 9.1**. A PWS risk screening will be undertaken to determine if any of the identified supply sources would be at risk from development in this area, with a further risk assessment undertaken for any supplies potentially at risk.

Flood risk

Flood risk is indicated to be relatively low within the Site, with areas of flood risk confined to the main watercourse channels. A few small areas within the Site are noted to have high risk of surface water flooding (SEPA, 2023b). Some areas downstream of the Site are noted to have a high risk of flooding.

9.6 Additional (secondary and tertiary) Mitigation

Construction

Key additional (secondary and tertiary) mitigation during the construction phase include:

- Surface water and sediment management;
- Pollution prevention;

- Watercourse crossing and drainage design;
- Peat management and peat handling; and
- Peat slide risk factors and management.

Operation

The main operational additional (secondary and tertiary) mitigation includes:

- Ongoing monitoring of water quality, drainage infrastructure and track status;
- Sediment management during maintenance; and
- Pollution prevention.

9.7 Description of Likely Significant Effects

Construction

There is potential for significant effects on the following receptors:

- Peat, peat soil and peatland;
- Water pollution arising from sediment release, spillages or pollution incidents;
- Changes to surface water or groundwater flow paths; and
- Increase in downstream flood risk arising from development infrastructure and drainage.

Operation

The potential for significant effects is considerably reduced during operation. Key potentially significant effects are:

- Water pollution arising from sediment release, spillages or pollution incidents; and
- Increases in downstream flood risk arising from poor management and maintenance of drainage infrastructure.

Effects considered likely to require assessment for construction and operation are:

- Physical changes to overland drainage and surface water flows;
- Particulates and suspended solids;
- Water contamination from fuels, soils, concrete batching or foul drainage;
- Changes in or contamination of water supply to vulnerable receptors;
- Increased flood risk;
- Modification to groundwater flow paths;
- Soil erosion and compaction; and
- Peat instability.

9.8 Opportunities for Enhancing the Environment

The widespread coverage of peat at the Site suggests that peatland restoration may be appropriate for parts of the Site, particularly in areas with eroding peat or locations where attempts have been made to drain peaty areas. This will be discussed with the terrestrial ecology team as there is overlap with habitat management and potential enhancements from a co-ordinated approach.

9.9 Proposed Assessment Methodology

The proposed assessment method involves a combination of desk-based data gathering, site visits and site-specific data collection followed by data analysis to determine the potential significance of effects.

Key legislation and regulation include:

- The Water Environment and Water Services (Scotland) Act 2003;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended;
- The Pollution Prevention and Control (Scotland) Regulations 2012;
- Scottish Planning Policy 2014;
- Fourth National Planning Policy (NPF4);
- Scottish Government's Planning Advice Notes (PAN), including PAN 51, PAN 61 and PAN 79;
- SEPA's Guidance for Pollution Prevention, including GPP1, GPP2, GPP5 and GPP21; and
- NatureScot's guidance on peatlands.

Methodology

To inform the assessment of the Proposed Development a detailed site visit and walkover survey will be undertaken to:

- verify the information collected during the baseline desk study;
- undertake a visual assessment of the main surface waterbodies;
- identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- visit any identified potential GWDTE (in consultation with the project ecology team);
- prepare a schedule of potential watercourse crossings and existing crossings that would require upgrading;
- inspect rock exposures that may be suitable for borrow pits and establish by probing an estimate of overburden thickness and confirmation of likely substrate; and
- allow appreciation of the project area including awareness of gradients, possible borrow pit sites, access route options and prevailing ground conditions, and to assess the relative location of all the components of the Proposed Development.

The assessment will involve a desk study to gather available data concerning the existing geological, hydrogeological, hydrological and soil conditions in the Site. Data will be collated from the sources identified in **Section 9.3** above.

Consultations will be carried out with the organisations and stakeholders identified in **Section 9.1** above. Following the desk study and data gathering exercise, a site reconnaissance and walkover survey will be undertaken. The reconnaissance and walkover will visit all areas identified as potentially at risk from the Proposed Development, such as GWDTE and areas identified for aggregate extraction. Any areas indicated to have a higher potential risk of peat instability will also be visited.

A constraints map will be produced to identify areas of higher sensitivity that should be avoided during the design process. This will include areas of deeper peat, sensitive wetlands, steeper slopes and other relevant constraints to development that are identified during the desk study.

Once an infrastructure layout is available, and if all areas of peat cannot be avoided by proposed infrastructure, a second peat probing survey will be undertaken. This will include peat probing at 50 m centres along all proposed new access tracks and 25 m crosshair probing at turbine locations (see **Section 9.4** above). Additional probing will be undertaken as required in areas where existing tracks require widening or modification at corners or junctions, and at all other infrastructure locations, to ensure that there is sufficient soil and peat depth information to support related studies on peat instability and peat excavation and reuse. It will include borrow pit locations and all turbine bases. Data from the peat

probing surveys will be used to inform a peat management plan (PMP) and peat slide risk assessment (PSRA) .

Peat Management Plan and Peat Slide Risk Assessment

The PMP will provide estimated volumes of peat to be excavated, and options for reuse of peat within the Proposed Development. Reuse options will include consideration of peat for reinstatement and restoration purposes, as well as habitat enhancement opportunities where these may be suitable. The PMP will also provide outline methods for peat and soil handling and storage. The PSRA will provide a formal assessment of the risk of natural or induced peat failure within and adjacent to the project area during the Proposed Development's lifespan. The PSRA will be undertaken in compliance with the Scottish Government's Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2017) and will make use of best practice guidance in the joint Scottish Government, NatureScot and SEPA document Peatland Survey: Guidance on Developments in Peatland (2017). Other relevant guidance will be used where appropriate.

Drainage Impact Assessment and Private Water Supplies

A drainage impact assessment and watercourse crossing inventory will be provided, to ensure that appropriate drainage is designed into the Proposed Development from the outset. This will consider suitable sustainable drainage systems to manage and treat runoff arising from the Proposed Development. Outline watercourse crossing designs will be prepared, to ensure that suitable crossing structures are proposed for each location.

Assessment of the final design against the locations of private water supplies (PWS) will be undertaken and reported in the EIA Report.

Borrow Pit Appraisal and Outline Design

The EIA Report will be accompanied by a Borrow Pit Appraisal to seek to source aggregate supply development needs from locations within the development boundary.

The outline design would involve determination of borrow pit sizes to allow for extraction of suitable volumes of material for the Proposed Development.

Groundwater-Dependent Terrestrial Ecosystems Assessment

Assessment of GWDTE will make use of vegetation mapping for the Proposed Development, combined with site data and local hydrogeological information, to determine whether identified wetland areas are groundwater-dependent. The assessment will consider any sensitive potentially groundwater-dependent wetland areas and will identify design, protection and mitigation measures that can be put in place to ensure that these sensitive habitats are duly considered in the design process, and protected from harm during site construction works. The assessment can be provided as a Technical Appendix in support of the EIA Report chapter.

Approach to EIA Report Chapter

An assessment will be made of the potential direct, indirect, cumulative and in-combination effects of the Proposed Development on geology, hydrogeology, hydrology and soils. Where relevant, mitigation and control measures will be put forward in order to manage or mitigate any potential impacts to sensitive receptors that may arise from the Proposed Development. A hierarchy of mitigation strategies will be devised and will follow best practice guidance including the Guidelines for Pollution Prevention (GPP), the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) and relevant SEPA policies and guidance.

The significance of any effects will be assessed using a matrix based on sensitivity of the receptor, magnitude of effect and likelihood of effect. Four levels of significance are applicable: 'Negligible', 'Low',

'Moderate' and 'High'. Effects of 'Moderate' and 'High' are considered to be significant. Details of the significance criteria are provided in **Appendix A**.

9.10 Limitations and Uncertainties

To ensure transparency within the EIA process, the following limitations and uncertainties have been identified:

- Private water supply data relies on information held by THC. This has been supplied by property owners and may be incomplete. Property owners/tenants may not be aware of details of their own supplies. Attempts will be made to verify supply details. Where this is not possible, a worst-case scenario will be assessed and contingency mitigation measures provided.

9.11 References

- BGS (2022). GeoIndex online geological mapping. British Geological Survey. Available at: http://mapapps2.bgs.ac.uk/geoindex/home.html, accessed Aug 2022
- NatureScot (2022) SiteLink. Available at: https://sitelink.nature.scot/map, accessed Aug 2022
- SEPA (2023a). Water Environment Hub. Scottish Environment Protection Agency. Available at:https://www.sepa.org.uk/data-visualisation/water-environment-hub/, accessed Aug 2023
- SEPA (2023b). Flood Map. Scottish Environment Protection Agency. Available at: http://map.sepa.org.uk/floodmap/map.htm, accessed Aug 2023
- Scotland's Environment (2022). Groundwater classification. Scottish Government. Available at https://map.environment.gov.scot/sewebmap/, accessed Aug 2022
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- Scotland's Soils (2016). Carbon and Peatland map. Scottish Natural Heritage. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10#, accessed Aug 2022

9.12 Key Questions for Consultees

- *Are there any other key stakeholders or stakeholder organisations that should be consulted?*
- *Are there any additional data sources or guidance documents that should be considered?*
- *Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?*
- *Are any receptors/assets/resources not identified that you would like to see included in the EIA?*
- *Are there any known flooding concerns downstream that could be affected by the Proposed Development?*
- *Is the proposed peat assessment scope acceptable?*

10 ARCHAEOLOGY AND CULTURAL HERITAGE

10.1 Consultation

No consultation has been undertaken to date. However, following scoping, consultation with national and regional curators, Historic Environment Scotland (HES) and THC will be undertaken to agree the cultural heritage viewpoints for the EIA Report setting assessment through provision of a desk-based baseline assessment and stage 1 setting assessment.

10.2 Study Area

Overlapping study areas are proposed for the identification of heritage assets that may be affected by the Proposed Development:

- the Site boundary, to identify potential direct (physical) impacts; and
- the Outer Study Area (OSA) based on a bare earth ZTV to identify assets beyond the Site that may be affected through development within their setting.

Within the Site boundary, all known and potential heritage assets will be assessed for potential direct, setting and indirect effects.

Within the OSA, assets will be included in the assessment based on the level of importance assigned to the asset so as to ensure that all likely significant effects are recognised, as follows:

- Up to 2 km from the furthest outlying proposed turbines: Category C Listed Buildings and all non-designated heritage assets.
- Up to 10 km from the proposed turbines: Scheduled Monuments, Category A and B Listed Buildings, Conservation Areas, Inventory Gardens and Designed Landscapes, and Inventory Historic Battlefields.
- Beyond 10 km from the proposed turbines: World Heritage Sites and any asset that is considered exceptionally important, and where long-distance views from or towards the asset are thought to be particularly sensitive, in the opinion of the assessor or relevant consultees.

The baseline will be screened (and agreed with relevant consultees) to identify any assets of particular sensitivity or importance. Criteria for the identification of assets of particular sensitivity or importance will be based on the approach set out in Managing Change in the Historic Environment: Setting (Historic Environment Scotland, 2016, updated 2020) that sets out of factors which might form part of the setting of a heritage asset.

10.3 Data sources to Inform the EIA Baseline Characterisation

A desk-based baseline assessment will be conducted to establish the baseline condition of the Site and key heritage assets in the OSA, including the contribution made to their cultural significance by their setting. The principal sources of information will be the Historic Environment Record (HER), supplemented by relevant published documentary and cartographic material as appropriate, including sources of aerial photography as appropriate. Various sources will be consulted for the collation of data, including but not limited to:

- Designation data downloaded from Historic Environment Scotland;
- HER data, digital extract from THC;
- The National Record of the Historic Environment (NRHE), including the Canmore database and associated photographs, prints/drawings and manuscripts held by HES;
- Conservation Area Character Appraisals;
- Historic Landscape Assessment data;
- The National Collection of Aerial Photography;
- Geological data available online from the British Geological Survey;
- Historic maps held by the National Library of Scotland;
- Unpublished maps and plans held by the National Records of Scotland;
- Relevant internet resources, including Google Maps, Google Earth, Bing satellite imagery and PastMap;
- Readily available published sources and unpublished archaeological reports.
- LIDAR DTM data, which is freely available from the Scottish Remote Sensing Portal for the Site for the survey of potential hitherto unknown heritage assets within the Site (as requested by THC Historic Environment Team (HET) through pre-application consultation);
- ZTV / cumulative ZTV; and
- Findings of other environmental topics (LVIA, peat depth, ground conditions, noise and vibration).

10.4 Surveys to Inform the EIA Baseline Characterisation

A Site visit will be undertaken to 'ground-truth' the results of the LIDAR survey, as well as to record Site characteristics, any visible archaeology and geographical/geological features which may have a bearing on previous land use and archaeological survival, as well as those which may constrain subsequent archaeological investigation.

The stage 1 setting assessment methodology (see below) considers each heritage asset in the OSA in turn to identify heritage assets in the ZTV that have a wider landscape setting that contributes to their cultural significance and whether it is likely that cultural significance will be harmed by the Proposed Development. Where heritage assets are located outwith the ZTV, third-party viewpoints within the ZTV which may provide a key view towards the heritage asset and the Site are considered.

10.5 Baseline Conditions

The baseline information used for this EIA Scoping Report has been compiled using existing data on the historic environment:

- HES designations data available as Geographical Information Systems (GIS) datasets;
- THC HER data provided by THC as a digital dataset on 8th July 2022; and
- NRHE comprising the Canmore database.

Site Boundary

There is one known non-designated heritage asset within the Site boundary: MHG18810 Drochaid Allt an Rasail, a farmstead located on the Site's northern boundary. There are no further known heritage assets, designated or non-designated, within the Site boundary.

Beyond the Site boundary, informative of archaeological potential, there are further known designated and non-designated heritage assets in the Strath Oykel valley and in the settlement of Rosehall.

Outer Study Area

There are no designated heritage assets within 2 km of the proposed turbine locations. There are 17 non-designated heritage assets, of which two brochs are identified as having a wider landscape setting that potentially contributes to their cultural significance.

There are six designated heritage assets located between 2 km – 5 km from the proposed turbine locations: Scheduled Monument SM5302 Langwell fort and dun, and five Category B Listed Buildings comprising three bridges and Rosehall House and its walled garden.

Between 5 km – 10 km from the Site there is one designated heritage asset: SM1852 Dail Langwell broch.

Between 10 km – 20 km from the proposed turbine locations there are two Category A Listed Buildings, only one of which is located within the ZTV for the Proposed Development: LB279 Shin Viaduct.

10.6 Additional (secondary and tertiary) Mitigation

Construction

Precautionary mitigation to avoid accidental direct impacts on heritage assets within the Site during construction may include demarcating their presence using physical barriers, if appropriate, with a suitable buffer off the asset established.

Where direct impacts are identified through EIA, evaluation methodologies may be employed (such as intrusive works) to better understand the extent and cultural significance of archaeological remains. Adverse effects may be mitigated by an appropriate level of survey, excavation, recording, analysis and publication of the results, in accordance with a written scheme of investigation (NPF4 Policy 7(o)and PAN2/2011, sections 25-27).

Operation

The design will seek to ensure that the Proposed Development would not dominate heritage assets that were intentionally constructed historically to be prominent landscape features, and will seek to maintain key intentional sightlines between, to, from or across associated and contemporary monuments, or designed vistas. The Proposed Development layout would not unacceptably impact upon any intact cultural landscapes.

10.7 Description of Likely Significant Effects

The section is intended to identify likely significant effects of the Proposed Development upon the physical fabric and settings of heritage assets within the Site boundary, and likely significant effects on the cultural significance of assets within the wider landscape through development within their setting, which will need detailed consideration through EIA.

Effects on cultural heritage can arise through direct physical effects, indirect effects, or effects on setting.

- Direct physical effects describe those development activities that directly cause damage to the fabric of a heritage asset. Typically, these activities are related to construction works and would only occur within the Site boundary.
- Indirect effects describe secondary processes, triggered by the Proposed Development, that lead to the degradation or preservation of heritage assets. For example, changes to hydrology may affect archaeological preservation; or changes to the setting of a building may affect the viability of its current use and thus lead to dereliction.

- An effect on the setting of a heritage asset occurs when the presence of a development changes the surroundings of a heritage asset in such a way that it affects (positively or negatively) the cultural significance of that asset. Visual effects are most encountered but other environmental factors such as noise, light or air quality can be relevant in some cases. Impacts may be encountered at all stages in the life cycle of a development from construction to decommissioning, but they are only likely to lead to significant effects during the prolonged operational phase of the Proposed Development.

Likely significant effects on unknown heritage assets will be discussed in terms of the risk that a significant effect could occur. The level of risk depends on the level of archaeological potential combined with the nature and scale of disturbance associated with construction activities and may vary between high and negligible for different elements or activities associated with a development, or for the Proposed Development as a whole.

Given the extent of known heritage assets, and the upland location, based on currently available information the archaeological potential of the Site is negligible. Significant direct physical effects within the Site as a result of construction of the Proposed Development is considered very unlikely.

A stage 1 assessment of heritage assets in the OSA in comparison with the scoping ZTV, carried out for this Scoping Report, has identified no heritage assets where an adverse effect upon the cultural significance of a heritage asset is anticipated through development within its setting. Significant effects both within and beyond the Site as a result of the operation of the Proposed Development is considered very unlikely.

10.8 Opportunities for Enhancing the Environment

Archaeological investigation can have a beneficial effect of increasing knowledge and understanding of an asset, thereby enhancing its archaeological and historical interest and offsetting adverse effects.

10.9 Proposed Assessment Methodology

It is proposed that the EIA will be carried out with reference to the following legislation, policy and guidance:

Legislation:

- The Ancient Monuments and Archaeological Areas Act 1979;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997; and
- The Historic Environment Scotland Act 2014.

Policy:

- National Planning Framework (NPF) 4 Part 1 A National Spatial Strategy for Scotland 2045 and NPF4 Part 2 National Planning Policy (The Scottish Government, February 2023) Policy 7: Historic assets and places;
- Historic Environment Policy Scotland (HEPS) (HES, 2019); and
- Highland Council Local Development Plan (HwLDP, 2012): Policy 57: Natural, Built and Cultural Heritage.

Guidance:

- Historic Environment Scotland Circular (HES, 2019);
- Planning Advice Note (PAN) 2/2011: Planning and Archaeology;
- IEMA/CIfA/IHBC Principles of Cultural Heritage Impact Assessment in the UK (2021);
- Designation Policy and Selection Guidance (DPSG), (HES 2019);
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA 2020);

- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA 2020);
- Managing Change in the Historic Environment: Setting (Historic Environment Scotland (HES) 2016, updated 2020);
- Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland (NatureScot and HES, 2018); and
- The Highland Council Standards for Archaeological Work (March 2012).

Stage 1 Setting Assessment

Likely significant effects on the settings of heritage assets will be identified from an initial desk-based appraisal of data from HES, the HER and consideration of current maps and aerial images available via online sources. The methodology adopted for the identification and assessment of potential effects on setting follows the approach set out in Managing Change in the Historic Environment: Setting (Historic Environment Scotland, 2016, updated 2020) and the Environmental Impact Assessment Handbook (Ver 5, NatureScot & HES, 2018, Appendix 1). The guidance sets out three stages in assessing the impact of development on the setting of a heritage asset or place as follows:

- *"Stage 1: Identify the historic assets that might be affected by a development;*
- *Stage 2: define and analyse the setting by establishing how the surroundings contribute to the ways in which the historic asset or place is understood, appreciated and experienced; and*
- *Stage 3: evaluate the likely significant effect of the proposed changes on the setting, and the extent to which any negative impacts can be mitigated."*

Visualisations

Where this initial appraisal identifies the potential for a significant effect, the asset will be visited to define baseline conditions and identify key viewpoints.

Wireframe visualisations will be used in tandem with the ZTV to understand the likely nature of change in the setting of heritage assets. Visualisations will be prepared to illustrate changes to key views where potentially significant effects are identified (as requested by THC HET in pre-application consultation).

Consultation with national and regional curators (HES and THC) will be undertaken to agree the viewpoints for the EIA Report setting assessment.

Cultural significance is a quality that applies to all heritage assets and as defined by HES (NatureScot & HES 2018, Appendix 1 page 175), relates to the ways in which a heritage asset is valued both by specialists and the general public; it may derive from factors including the asset's fabric, setting, context and associations. Following NPF4 'Policy Principles', the analysis of a heritage asset's cultural significance aims to identify its 'special characteristics' which should be protected, conserved or enhanced. Such characteristics may include elements of the asset's setting, which is defined in Historic Environment Scotland's guidance as *"the way in which the surroundings of a historic asset or place contribute to how it is experienced, understood and appreciated"* (HES 2016, updated 2020, Section 1).

Magnitude of Impact

The magnitude of an impact is a measure of the degree to which the cultural significance of a heritage asset would potentially change as a result of the Proposed Development (NatureScot & HES 2018, Environmental Impact Assessment Handbook, v5 Appendix 1, para 42). This definition of magnitude applies to likely effects on the setting as well as likely physical effects on the fabric of an asset.

Significance of Effect

The significance of an effect on the cultural significance of a heritage asset, resulting from a direct or indirect physical effect or an effect on its setting, is assessed by combining the magnitude of the impact and the importance of the heritage asset. 'Major' and 'Moderate' effects will be regarded as 'significant', while 'Minor' and 'Negligible' effects will be recorded as 'not significant'.

In all cases conclusions will be expressed in terms of the relevant Policy tests (NPF4).

10.10 Limitations and Uncertainties

To ensure transparency within the EIA process, the following limitations and uncertainties have been identified:

- HER and NRHE records can be limited because opportunities for research, fieldwork and discovery depend on the situation of commercial development and occasional research projects, rather than the result of a more structured research framework. A lack of data within the HER and NRHE records does not necessarily equal an absence of archaeology;
- Where archaeological sites have been identified solely from aerial imagery without confirmation from archaeological excavation or supporting evidence in the form of find-spots for example, it is possible the interpretation may be revised in the light of further investigation; and
- Any archaeological site visit has inherent limitations, primarily because archaeological remains below ground level may have no surface indicators.

10.11 References

- CIfA, 2020, *Standard and Guidance for Historic Environment Desk-Based Assessment*. Available at: https://www.archaeologists.net/sites/default/files/CifAS%26GDBA_4.pdf
- CIfA, 2020, *Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment*. Available at: https://www.archaeologists.net/sites/default/files/CifAS%26Gcommissioning_2.pdf
- HES, 2019, *Designation Policy and Selection Guidance (DPSG)*. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b
- HES 2016, updated 2020, *Managing Change in the Historic Environment: Setting*. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=80b7c0a0-584b-4625-b1fd-a60b009c2549
- IEMA/CIfA/IHBC, 2021, *Principles of Cultural Heritage Impact Assessment in the UK*. Available at: https://www.archaeologists.net/sites/default/files/j30361_iema_principlesofchia_v8.pdf
- NatureScot and HES, 2018, *Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland*. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf

10.12 Key Questions for Consultees

- *Are consultees content with the proposed Outer Study Area buffers presented in this Scoping Report?*
- *Are there any other relevant consultees other than HES and THC who should be contacted with respect to the Cultural Heritage and Archaeology assessment?*
- *Do consultees wish to request any specific heritage assets to be assessed in the EIA Report?*

11 TRAFFIC AND TRANSPORT

11.1 Consultation

No consultation has taken place to date. However, consultation will be undertaken with THC and Transport Scotland.

11.2 Study Area

It is anticipated that the study area can be broadly defined as the main road routes between Invergordon and the Site for the delivery of Abnormal Indivisible Loads and routes that will be used by heavy goods vehicles delivering construction materials and equipment to the Site. This will include the A9(T) Edinburgh to Scrabster (Thurso) Trunk Road, A839 The Mound to Rosehall (via Lairg) Road, A836 Dornoch Bridge to John O' Groats Road and A837 Invershin to Lochinver Road.

11.3 Data sources to Inform the EIA Baseline Characterisation

Baseline traffic flow data for the assessment will be gathered from publicly available sources such as the Department for Transport (DfT), Transport Scotland, THC, or suitable development planning applications.

General characteristics of the study area in terms of the Traffic and Transport subject matter will be gleaned from on-site observation and desktop-based research.

11.4 Surveys to Inform the EIA Baseline Characterisation

Any supplementary (new) data collection on relevant roads, where required, will be carried out using short duration (1 week) Automated Traffic Counter (ATC) surveys.

11.5 Baseline Conditions

An initial review of the DfT data indicates traffic count sites where data is available covering the study area.

These are:

- A836 Lairg Village (40936);
- A836 Achinduich (20934);
- A836 Bonar Bridge (50937);
- A836 Ardgay Village (80005);
- A836 North of Edderton (80004);
- A837 Linsidemore (30937);
- A837 Oykel Bridge (10937);
- A839 Pittentrail (20935);

- A839 Braemore (50934);
- A9 The Mound (30722);
- A9 South of Clashmore (80002);
- A949 West of Whiteface (80006); and
- A9 Glenmorangie Distillery (80001).

11.6 Additional (secondary and tertiary) Mitigation

Construction

Secondary mitigation:

Wear and Tear Agreement, under Section 96, Road (Scotland) Act – to cover the cost of abnormal wear and tear on routes that will be used by construction traffic, in particular by Heavy Goods Vehicles (HGV)s, where it has been determined that a specific road is not suitable for continuous by heavy HGVs. This will require pre-construction records to made of the condition of any route to be used. During construction activities, a road wear and tear review will be undertaken with Local Road Authority concerned at an agreed interval. Any damage to road infrastructure caused directly by construction traffic would be made good, and street furniture that is removed on a temporary basis will be fully reinstated.

Site Access Traffic Management Plan – review of access route passing places will be undertaken post consent to agree a list of strategic passing place enhancements. The review will consider passing places that will be extended and widened (within the limits of the adopted road boundary). This review will help improve journey times on any single-track carriageway sections and reduce potential conflicts with other road users. Any improvements will be carried out prior to the start of bulk deliveries being made to site.

Tertiary mitigation:

Voluntary speed limits for HGVs when passing through settlements along construction routes.

Maximisation of useable construction material for access tracks and hardstanding areas from on-site borrow pits and careful programming of the works.

Operation

Apart from occasional maintenance visits to service the Proposed Development, the operational phase is not considered to introduce a significant increase in traffic and therefore no additional (secondary and tertiary) mitigation is required.

11.7 Description of Likely Significant Effects

Construction

Turbine components will be transported by sea to a defined Port of Entry from where components would be brought to Site by abnormal load vehicles via an agreed route.

General construction material would need to be transported to the Site in standard HGVs, leading to a temporary increase in traffic volumes on the surrounding road network. This will be dependent on the Proposed Development construction material quantities required and their source which is unknown at this time, and this will need to be considered across an 18-month construction programme. Additionally, a small number of trips would also be generated by personnel travelling to Site.

Operation

Apart from occasional maintenance visits to service the Proposed Development, the operational phase is not considered to introduce a significant increase in traffic. It is therefore considered that no significant

effects will arise during the operational phase and therefore the operational phase is scoped out of further assessment.

11.8 Opportunities for Enhancing the Environment

No opportunities to enhance the environment from a traffic and transport perspective are envisaged at present.

11.9 Proposed Assessment Methodology

The detailed scope of the transport assessment will be agreed with THC Roads Department and Transport Scotland in respect to their specific assets. It is anticipated that the assessment will include the following key elements:

- Preparation of an Abnormal Indivisible Loads Assessment to confirm the proposed route to Site from the Port of Entry to the Site access point.
- Calculation of increased traffic generation on the surrounding road network during construction of the Proposed Development based on material and staffing requirements.
- Assessment of the environmental effects of increased traffic generation on the surrounding road network used during construction.
- Assessment of the effects associated with increased traffic through local small settlements including the residential properties along the proposed access routes.

The Institute of Environmental Management and Assessment's document, 'Guidelines for the Environmental Assessment of Road Traffic' (IEMA, formerly IEA) will be used in the assessment of traffic related environmental effects. It sets out a methodology for identifying significant environmental effects where the Proposed Development is likely to give rise to changes in traffic flows.

The guidance also states that to determine the scale and extent of potential impacts, the following two rules should be used to identify road links within the study area where a full assessment will be required:

- Rule One: include highway links where flows are predicted to increase by more than 30% or where the number of HGVs is predicted to increase by more than 30%;
- Rule Two: include any other specifically sensitive area where traffic flows are predicted to increase by 10% or more.

The assessment of construction traffic will be provided in terms of sensitivity of the road network and the magnitude of effect, to provide a professional judgement of effect and its significance.

Any significant cumulative traffic impacts associated with other 'committed' developments commencing in tandem with the Proposed Development will also be considered. The cumulative assessment of traffic and transport effects only considers developments that are approved, but not yet under construction, submitted but pending decision, or at appeal as only these schemes may potentially be under construction concurrently with the Proposed Development. The requirement for the inclusion of a committed development in the cumulative assessment applies where the respective development construction phase could coincide with that of the Proposed Development and where the same local road network infrastructure would be used.

11.10 Limitations and Uncertainties

No limitations or uncertainties have been realised to date and neither are any anticipated.

11.11 References

Principal references for this subject matter are:

- Institute of Environmental Assessment (now IEMA) (1993) Guidelines for the Environmental Assessment of Road Traffic
- Institute of Highways and Transportation (1994) Guidelines for Traffic Impact Assessment
- Scottish Government (2012), Transport Assessment Guidance

11.12 Key Questions for Consultees

- *Do you agree with the proposed list of consultees?*
- *Are there any other key stakeholders or stakeholder organisations that should be consulted?*
- *Do you agree with the proposed study area(s)?*
- *Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?*
- *Are there any additional data sources or guidance documents that should be considered?*
- *Do you agree that the surveys proposed to inform the EIA baseline characterisation are appropriate?*
- *Do you agree that the identification of what constitutes the baseline environment is appropriate and that all relevant receptors have been identified?*
- *Are any receptors/assets/resources not identified that you would like to see included in the EIA?*
- *Do you agree with the proposed additional (secondary and tertiary) mitigation measures and is this mitigation appropriate?*
- *Do you agree that all potential impacts have been identified?*
- *Do you agree with the receptors that are proposed to be scoped in and out of the EIA?*
- *Do you agree with the proposed factor-specific assessment approach?*
- *Do you agree with the proposed cumulative assessment approach?*

12 NOISE AND VIBRATION

12.1 Consultation

A response to a pre-application request to the THC's Environmental Health Department has been received. This covers a range of subject areas, including noise. The key topics raised, include the following:

Operational Noise

THC request that a noise impact assessment be undertaken in accordance with the ETSU- R-97 "The Assessment and Rating of Noise from Wind Farms" and the associated Good Practice Guide published by the Institute of Acoustics. There is one main stipulation in terms of the assessment and that is to work to an absolute night time limit of 38 dB L_{A90} rather than 43 dB L_{A90}, with 5dB above background still being applicable in all case up to 12ms^{-1}.

Cumulative Noise

THC request a map illustrating all wind farms (consented, in development, or operational) be produced, along with noise sensitive locations clearly displayed. This should indicate of those locations which are financially involved.

In addition, a table showing all locations with the development noise level contribution, adjacent scheme/s contribution and the total cumulative value. Appropriate limits for cumulative impact assessment should be defined and agree with THC's Environmental Health Officer.

Noise Exposure

THC have requested the following:

'When assessing the cumulative impact from more than one wind farm, consideration must be given to any increase in exposure time. Regardless of whether cumulative levels can meet relevant criteria, if a noise sensitive property subsequently becomes affected by wind turbine noise from more than one direction this could result in a significant loss of respite'.

Background Noise Measurements

THC have requested that monitoring be undertaken in accordance with ETSU and the GPG, including a method so as to not include existing turbine noise.

Amplitude Modulation

THC have confirmed that this would be looked at through Statutory Notice provisions held by THC.

Construction Noise

Construction noise assessment required where the works occur outside of defined periods, these being 8am to 7pm Monday to Friday and 8am to 1pm on Saturdays. Evidence of Best Practicable Means to be shown regardless of hours.

The above has been considered as part of the proposed assessment approach.

12.2 Study Area

The study area will include the nearest noise sensitive receptors considered to be representative of residential dwellings in the immediate vicinity that may be subject to the effects of noise from construction and/or operation of the Proposed Development, selected based on the results of (initial) predictive noise modelling, relevant noise criteria and professional judgement. However, the 'study area' for the wind farm component should, as a minimum, be the area within which noise levels from the proposed, consented and existing wind turbines may exceed 35 dB L_{A90} at up to 10 m/s wind speed (i.e. any area which as a

direct component of the proposed wind farm, or as a cumulative result of the operation of the proposal and other neighbouring wind farms would exceed 35 dB(A)).

A preliminary model has been prepared to establish the noise levels generated by the Proposed Development turbines. The model has been based on a turbine sound power level of 108 dB L_{Aeq} at 10ms^{-1} wind speed, with a hub height of 118.5m in each proposed turbine location. The indicative noise contours based on these assumptions is provided in **Figure 12.1**. During the EIA process, this will be updated to include cumulative contributions from other consented and existing wind turbines, and the study area adjusted accordingly.

12.3 Data sources to Inform the EIA Baseline Characterisation

The following data sources will inform the EIA baseline characterisation:

- Any available baseline noise survey studies previously undertaken in the area. The relevance, recency and use of previous studies will be considered in consultation with THC's Environmental Health Department;
- Any available third-party noise impact assessment(s). The relevance, recency and use of third-party studies will be considered in consultation with THC's Environmental Health Department;
- Aerial imagery and online geographic information systems; and
- On-site photography taken on site walkover(s).

12.4 Surveys to Inform the EIA Baseline Characterisation

Representative baseline noise survey locations for assessment of the wind farm element will be selected by identifying those residential dwellings which may exceed 35 dB L_{A90} at up to 10 ms^{-1} wind speed in noise level from the proposed, consented and existing wind turbines (i.e. on its own or cumulatively). A noise contour plot of the Site will be prepared based on data taken from the candidate turbine at 10 m/s wind speed. Noise levels from existing operational wind farms near to the Proposed Development and any nearby consented wind farms will be added to this to give an understanding of the predicted noise levels on and near to the Proposed Development for receptors. An assessment will be undertaken on any dwellings that are subsequently predicted to be affected by emissions from either the Proposed Development or cumulative effects in combination with nearby developments.

The locations selected as representative baseline noise survey locations will also be subject to consultation and agreement with THC's Environmental Health Department.

In addition, the locations and assessment approach agreed with THC will, for the purposes of setting appropriate noise limits due to the presence of other wind farms in the area, be selected such that the contribution to background noise levels from existing wind turbines will be discounted when determining background noise levels.

Representative baseline noise survey locations for the Proposed Development's BESS/solar infrastructure will be based on the nearest noise sensitive receptors. The locations selected as representative baseline noise survey locations will also be subject to consultation and agreement with THC's Environmental Health Department.

Wind data, including wind speed and direction, will be obtained to inform the baseline noise survey, at a location representative of the Site.

12.5 Baseline Conditions

The Site is located in an area of low population density with the nearest noise-sensitive receptors (residential dwellings) located mainly south-east of the Site in the village of Rosehall. The Site location relative to local communities is provided in **Section 2.3**.

The background noise environment is likely characterised by noise sources such as wind-swept vegetation, birdsong, watercourses, farm animals and traffic from local roads, which vary in influence according to weather conditions and time of day.

The closest operational wind farm sites in the local area that may influence baseline conditions by contributing to the Proposed Development's surrounding background noise environment and potentially introduce cumulative noise effects are the adjacent Rosehall and Achany wind farms (east of the Site). The separation distances from the Site and the operational Rosehall and Achany wind farms are approximately 1.79 km and 2.8 km respectively. Turbine T3 and T6 are located approximately 3.5 km from the closest turbine within Achany Wind Farm. Turbine T9 is the closest to Rosehall Wind Farm, located at a distance of approximately 3.8 km.

12.6 Additional (secondary and tertiary) Mitigation

Ancillary infrastructure will also be reviewed in relation to risk of significant effects from potential construction noise levels. Noise on construction sites is controlled by 'best practical means' to minimise noise from construction activities and, if required, the introduction of additional (secondary and tertiary) mitigation, such as temporary noise barriers, during certain activities to reduce noise levels further.

12.7 Description of Likely Significant Effects

The following elements will be scoped into further assessment:

- Noise associated with the operation of the wind farm element (including cumulative noise due to operation of neighbouring wind farms);
- Noise from operation of the inverter(s), transformer(s), battery and other ancillary electrical infrastructure associated with the solar photovoltaic array-BESS system element;
- Noise and vibration from the construction activities and associated construction traffic.

The following elements are intended to be scoped out of further assessment:

- Vibration resulting from the operation of the Proposed Development – levels of vibration would typically be imperceptible over the distance ranges between the wind turbines and the nearest residential dwelling;
- Infrasound and low frequency noise resulting from the operation of the wind farm element – a 2010 study performed on behalf of the UK Government on 'Wind Turbines and Human Health' found no evidence for health effects from infrasound or low frequency noise stemming from wind turbines.

12.8 Opportunities for Enhancing the Environment

No opportunities to enhance the environment from a noise and vibration perspective are envisaged at present.

12.9 Proposed Assessment Methodology

The following relevant standards, guidance and industry best practice will inform the noise and vibration assessment:

- BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound';
- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites: Noise';
- BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites: Vibration';
- Calculation of Road Traffic Noise Memorandum (CRTN);
- Design Manual for Roads and Bridges (DMRB), LA 111 'Noise and Vibration';
- ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms';
- Institute of Acoustics 'Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise';
- ISO 9613-2:1996 – Acoustics. Attenuation of sound during propagation outdoors. Part 2: General method of calculation;
- Scottish Government Planning Advice Note (PAN) 1/2011 'Planning and Noise'; and
- Scottish Government Technical Advice Note (TAN): 'Assessment of Noise'.

Construction

An assessment of construction noise levels associated with the onsite works will be undertaken using the assessment methodology and significance criteria set out in BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites: Noise'. The assessment will consider the primary phases of works. The assessment will determine if exceedances of the defined acoustic criteria are predicted to occur and will identify potential mitigation measures to minimise adverse effects.

The noise arising from construction traffic flows on local roads will be predicted using the calculation methods set out in the Calculation of Road Traffic Noise publication, which will be assessed against the criteria in Design Manual for Roads and Bridges LA 111. The assessment will be based on traffic flow data.

Where considered applicable based on the proximity of sensitive receptors from the works, a construction vibration assessment will be undertaken using the assessment methodology and significance criteria set out in BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites: Vibration'.

Operation

Current best practice calls for the control of wind turbine noise by the application of noise limits at the nearest noise sensitive properties. It is considered that absolute noise levels applied at all wind speeds are not suited to wind turbine developments and therefore best practice is to adopt noise limits relative to background noise levels in the vicinity of the noise sensitive locations. Therefore, one critical aspect of the noise assessment of wind energy proposals relates to the identification of baseline noise levels through on-site noise surveys.

On the assumption that some receptors will be within the 35 dB L_{A90} noise contour for sole or cumulative impact, the following will apply. Continuous baseline noise monitoring will be carried out at representative noise sensitive locations for a suitable period and should capture a representative sample of wind speeds in the area (i.e. cut in speeds to wind speed of rated sound power of the proposed turbine). Background noise measurements (i.e. $L_{A90,10min}$) will be carried out in light of guidance contained within the Institute of Acoustics (IoA) document A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise and related to wind speed measurements that are collated at the site of the wind turbines of the Proposed Development. Regression analysis is then applied to this data set to derive background noise levels at various wind speeds, and from this, the appropriate day and night time noise criterion curves can be established.

In the case of wind farms that may have significant cumulative effects, further analysis methods are applied in deriving background noise levels free of influence from other wind farm developments (both existing and consented). The most common methods are directional filtering (excluding data known to be influenced by cumulative developments under certain wind directions) and subtraction (subtracting a

prediction of the noise contribution from cumulative developments from measured background noise levels).

Noise emissions associated with the wind turbines are predicted in accordance with ISO 9613: Acoustics – Attenuation of sound outdoors, Part 2: General method of calculation (1996) and again considering guidance contained within IoA document A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise. This is a noise prediction standard that considers noise attenuation offered, amongst others, by distance, ground absorption, directivity and atmospheric absorption. Noise predictions and contours are typically prepared for various wind speeds and the predicted levels are compared against the relevant noise criterion curve to demonstrate compliance with the guidelines.

An operational phase assessment of the other noise emitting infrastructure associated with the Proposed Development (substation transformers, solar photovoltaic-system inverter(s) and battery storage cooling fan system) will be undertaken to the requirements of BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'. Noise predictions of the proposed infrastructure will be derived from computer noise modelling or spreadsheet calculations as appropriate and will be compared with the measured prevailing background sound level (L_{A90}) at the nearest or most exposed receptors to determine the magnitude of impacts and significance of effects.

12.10 Difficulties and Uncertainties

To ensure transparency within the EIA process, the following difficulties and uncertainties have been identified:

- Consideration of cumulative noise impacts may require the determination of partial noise limits which may be difficult to obtain unless the amenity noise limit is precisely determined. The approach to the influence of cumulative noise on baseline noise measurements will be agreed with THC's Environmental Health Department.

12.11 References

- Department of Transport, 1988. *Calculation of Road Traffic Noise*. Her Majesty's Stationary Office
- Transport Scotland, 2019. Design Manual for Roads and Bridges (DMRB), LA 111 *Noise and Vibration*
- British Standards Institute, 2014. BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Noise*. British Standards Institute
- British Standards Institute, 2014. BS 5228-2:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites: Vibration*. British Standards Institute
- British Standards Institute, 2019. BS 4142:2014+A1: 2019 *Methods for rating and assessing industrial and commercial sound*. British Standards Institute
- GOV.Scot, 2011. *Assessment of noise: technical advice note.* [online] Available at: https://www.gov.scot/publications/technical-advice-note-assessment-noise/
- GOV.Scot, 2011. Planning Advice Note 1/2011: *planning and noise. [online] Available at: https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/pages/1/*
- Institute of Acoustics, 1997. *ETSU-R-97 The Assessment and Rating of Noise from Wind Farms*. Institute of Acoustics
- Institute of Acoustics, 2013. *Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*. Institute of Acoustics

- International Organisation of Standardization, 1996. *ISO 9613-2:1996 – Acoustics. Attenuation of sound during propagation outdoors. Part 2: General method of calculation*. International Organisation of Standardization
- Knopper, L.D., Ollson, C.A., McCallum, L.C., Whitfield ASLUND, M.L., Berger, R.G., Souweine, K. AND McDaniel, M., 2014. Wind turbines and human health. *Frontiers in public health*, 2, p.63

12.12 Key Questions for Consultees

- *Do you agree with the proposed approach to the noise assessment? Are there additional elements to be included for consideration?*
- *Do you agree with the elements of the assessment proposed to be scoped out?*
- *In terms of the THC request (see 12.1), with specific reference to 'Noise Exposure' in the absence of technical guidelines, what would be considered as an acceptable level/percentage of noise exposure, assuming noise limits form ETSU are met? If the cumulative assessment considers worst case impact (i.e. downwind noise propagation from all cumulative development simultaneously) does this not negate the need for assessment? Or would this mean that for short periods of exposure to higher limits, cumulative impact thresholds could be increased?*

13 CARBON EMISSIONS

13.1 Consultation

No consultation has taken place to date and no specific consultation in relation to climate change is envisaged, over and above the consideration of comments received to this EIA Scoping Report.

13.2 Study Area

The study area is defined as the area within the Site boundary for climate change mitigation (i.e., assessment of greenhouse gas emissions from the Proposed Development). Within the greenhouse gas (GHG) assessment scope 1 emissions will include those emitted directly from all facilities and infrastructure under the operational control of the Proposed Development, and likely within the Site boundary. However, scope 2 and any relevant scope 3 emissions (e.g., embodied carbon of construction materials) will occur outside the proposed Site boundary.

13.3 Data sources to Inform the EIA Baseline Characterisation

The following resources have been consulted:

- National soil map of Scotland (https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/)

In addition, the following resources will be used to inform the EIA Report:

- Data on final design;
- Data on likely disturbance of peat and forestry will be sourced from the Hydrology, Hydrogeology, Geology & Peat and Forestry assessments; and
- The Scottish Government's Carbon Calculator Tool will be utilised to assess potential greenhouse gas impacts of the Proposed Development. This is based on the work of Nayak et al. (2008, 2010) and Smith et al. (2011).

13.4 Surveys to Inform the EIA Baseline Characterisation

No discipline-specific surveys have been undertaken to date, and none are expected to be undertaken to inform the climate assessment beyond those referred to above.

13.5 Baseline Conditions

The Site contains a variety of natural carbon-stores. Soil cover comprises peaty gleys with dystrophic blanket peat with peaty gleyed podzols. Peat is present within the Site, with Class 1 carbon-rich soils to the west. Land cover comprises predominantly heather grassland, with some acid and improved grassland to the southeast and bog cover on higher elevation to the northwest. Coniferous woodland is found to the north eastern border of the Site.

Given these baseline characteristics, it is likely that the Site presently sequesters carbon. If disturbed, these carbon stores have the potential to release carbon into the atmosphere to form carbon dioxide. It

is thus possible that in addition to the emissions associated with the use of fuels for manufacturing, construction and decommissioning, on-site activities may also contribute towards limiting the sequestration capacity of the Site.

13.6 Additional (secondary and tertiary) Mitigation

No additional (secondary and tertiary) mitigation is proposed.

13.7 Description of Likely Significant Effects

Construction

Given the baseline characteristics, it is likely that the Site presently sequesters carbon. If disturbed, these stores have the potential to release carbon into the atmosphere to form carbon dioxide. It is thus possible that in addition to the embodied GHG emissions associated with manufacture of the turbines and associated ancillary infrastructure, on-site activities during construction not only contribute toward the emission of GHGs through the use of fossil fuels (e.g., through transport and equipment), but may also contribute towards limiting the sequestration capacity of the Site.

Operation

The negative effect from the construction phase of the Proposed Development may be offset by the significant positive impact from generation of low carbon electricity by the operation of the Proposed Development. Depending on the proposed design, its net impact has the potential to be significantly positive.

13.8 Opportunities for Enhancing the Environment

There are opportunities to enhance the natural carbon sequestering environment including improvement of degraded bogs, improvement of felled forestry, restoration of peat from borrow pits and removal of drainage from foundations and hardstanding. These will be assessed more fully in the EIA Report, particularly within the Hydrology, Hydrogeology, Geology & Peat and Forestry assessments.

13.9 Proposed Assessment Methodology

A desk-based assessment will be undertaken using the latest version of the Scottish Government's Carbon Calculator Tool (v1.7.0) to quantify GHG emissions and savings over the project lifecycle (manufacture, construction and operation).

Where peat or carbon-rich soils are present, SEPA requires planning applications for onshore wind farms to include a systematic assessment of the likely effects to these features, and emissions due to land-use change are included within the Carbon Calculator Tool.

The assessment will estimate the Proposed Development's net GHG impact and 'carbon balance period' (the time following the start of wind farm operation at which its embodied GHG emissions are offset through GHG savings from the wind farm's operation).

The assessment will draw on site-specific information including:

- Site characteristics (e.g., average temperature, wind speed);
- soil type and depth (from peat/soil survey);
- water table depth before and after construction;

- development proposals (turbine number and output, access tracks, borrow pits, hard standing and foundation areas etc.); and
- Where site-specific data are not available, national/regional information will be used.

This methodology is in accordance with the Institute of Environmental Management and Assessment's Environmental Impact Assessment guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022). Aligned with this guidance, any project that causes GHG to be avoided, or removed from the atmosphere, has a beneficial effect that is always significant.

13.10 Limitations and Uncertainties

No limitations or uncertainties have been realised to date and neither are any anticipated.

13.11 References

- Institute of Environmental Management and Assessment's (IEMA's) Environmental Impact Assessment guide to: Assessing Greenhous Gas Emissions and Evaluating their Significance (2022)
- National soil map of Scotland. Available at: https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/, accessed Aug 2022
- Nayak, D.R., Miller, D., Nolan, A., Smith, P., and Smith, J. (2008, revised 2010) Calculating carbon savings from wind farms on Scottish peat lands: a new approach. Available at: https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/, accessed Aug 2022
- Smith, J.U., Graves, P., Nayak, D.R., Smith, P., Perks, M., Gardiner, B., Miller, D., Nolan, A., Morrice, J., Xenakis, G., Waldron, S., and Drew, S. (2011) Carbon implications of windfarms located on peatlands – Update of the Scottish Government Carbon Calculator tool. Final Report, RERAD Report CR/2010/05
- Scottish Government (2023), National Planning Framework 4. Available at https://www.gov.scot/publications/national-planning-framework-4/

13.12 Key Questions for Consultees

- *Are there any other key stakeholders or stakeholder organisations that should be consulted?*
- *Are there any additional data sources or guidance documents that should be considered?*

14 OTHER ISSUES

14.1 Aviation

Consultation
Consultation has been undertaken with the Ministry of Defence and further consultation will be undertaken with Police Scotland, Air Ambulance and the Civil Aviation Authority (CAA) with regards to any potential lighting that might have interaction with aviation in the area on or around the Site.
Study Area
The assessment aims to identify all stakeholders potentially affected by the Proposed Development. This involves considering all military and civil aerodromes in the wider area out to circa 60 km, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities.
Data Sources to Inform the EIA Baseline Characterisation
A standalone aviation impact assessment has been conducted by the wind/aviation specialist consultant, Wind Business Support Ltd. The information gathered in that assessment will be used as the basis for the assessment presented in the EIA Report. The assessment of baseline conditions draws heavily on the consultancy database, which includes details of the following: • The location and details of military and civil radar sourced from the Ministry of Defence (MOD), airports, National Air Traffic Services (NATS), En-route plc and the Met Office; • The locations of navigational aids and air-ground-air comms stations sourced from NATS and the CAA; • The boundaries of military low flying and restricted areas, sourced from the MOD; • UK Aeronautical Information Publication (AIP); and • CAA NATS published Aeronautical charts.
Surveys to Inform the EIA Baseline Characterisation
The locations of all turbines are plotted on charts, also presenting the baseline data described above to determine proximity to any sensitive receptors, airspace classifications etc. In this case a radar line of sight assessment has been conducted to determine the visibility of the turbines to the radar at Inverness Airport, the Benbecula air defence radar, the RAF Lossiemouth ATC radar and the NATS Alanshill En-route radar.
Baseline Conditions
The Site lies 60 km northwest of Inverness Airport, in an area of uncontrolled airspace. It is just within the bounds of the military Tactical Training Area denoted TTA 14T, where low flying training is conducted. The turbines are not visible to any key radar in the area. The Site is well beyond the limits of safeguarding areas for all navigational aids and air-ground-air radio stations.

Additional (secondary and tertiary) Mitigation
None.
Description of Likely Significant Effects
There are potential impacts to military low flying only. Mitigation in the form of both visible spectrum and Infra-Red lighting will mitigate this impact. No significant residual effects are anticipated. Whilst no significant effects are expected as a result of the Proposed Development in relation to aviation, aviation consultees will be consulted on the final design for the Proposed Development.
Opportunities for Enhancing the Environment
No opportunities to enhance the environment from an aviation perspective are envisaged at present.
Proposed Assessment Methodology
The acceptability of the Proposed Development, in terms of net effects on aviation related interests, is established through direct consultation with all relevant stakeholders within the consenting process. The initial task is to independently assess the potential effects and, where significant effects may occur, to enter into a dialogue with the affected stakeholders. Where impacts are of concern, additional analysis may be required and where impacts are deemed unacceptable, further mitigation solutions will be identified and explored with the goal of reducing impacts to acceptable levels. While the aim of this dialogue is to avoid objection from all stakeholders before submission of the application for consent, this is not always possible where stakeholders will only engage once the application has been submitted. In order to ensure effects are fully captured a chapter focused on Aviation will be included in the EIA ReportEIAR.
Limitations and Uncertainties
The military low flying impacts can only fully be determined by the MOD as a part of the scoping and consenting process. The low flying subject matter expert within the MOD will review the Proposed Development. Until that time, some uncertainty remains on the position of the MOD.
References
N/A
Key Questions for Consultees
None

14.2 Shadow Flicker

Consultation
No consultation has taken place to date and no specific consultation in relation to shadow flicker is envisaged, over and above the consideration of comments received to this EIA Scoping Report.
Study Area
In line with THC's guidance on Shadow Flicker Assessments, the assessment will consider dwellings located within a distance of 11 rotor diameters from the proposed wind turbine generators. The study area is currently based on the indicative rotor diameter of 163 m, therefore, the proposed shadow flicker study area is based on a buffer of 1,793 m of each proposed wind turbine. Should the wind turbine specifications change, a new study area will be established to reflect the 11-rotor diameter distance requirement.
Data sources to Inform the EIA Baseline Characterisation
Resoft WindFarm Release 5 will be employed to conduct the assessment. Data sources required to perform the assessment include: • Ordnance Survey 5 digital terrain dataset, • Address database, • Wind turbine locations and specifications, and • Geographic information of the study area e.g., latitude, longitude, true north orientation angle, and other.
Surveys to Inform the EIA Baseline Characterisation
No specific surveys have been undertaken or are planned. However, should significant adverse impacts be predicted at any residential receptor, a site survey will be undertaken to identify whether: • The identified receptors have windows facing the Proposed Development, • There are physical screening objects between the Proposed Development and identified receptors, and • How receptor spaces subject to shadow flicker are being utilised.
Baseline Conditions
The Site comprises open moorland with blocks of plantation, forestry and planting. Deer stalking takes place on the Site and forestry is present to the immediate east of the Site and in the southern portion of the Site. There are no current uses on Site that generate any shadow flicker. There are several residential properties within the preliminary shadow flicker study area. Although some of the identified properties may be directly financially involved with the Proposed Development, all dwellings located within the study area will be assessed equally against the worst-case scenario criteria, and where appropriate necessary mitigation will be proposed.
Additional (secondary and tertiary) Mitigation

The Proposed Development will be designed where possible to avoid turbine placements within the Zone of Potential Shadow Flicker (ZPSF). Should this be achieved, then shadow flicker will be scoped out of further assessment.

If the model predicts significant adverse shadow flicker impacts on any of the receptors within the study area, the presence of windows facing the Proposed Development will be confirmed. If no windows are present, then no significant shadow flicker impact will arise, and no further mitigation will be required.

If it is confirmed that locations with significant effects have windows facing the Proposed Development, a scheme of mitigation will be proposed.

Description of Likely Significant Effects

The Proposed Development will be designed where possible to avoid turbine placements within the ZPSF. Should this be achieved, then shadow flicker will be scoped out of further assessment.

If it is not possible to avoid shadow flicker effects through turbine placement, then the dates, times and durations of shadow flicker events for each property within the ZPSF will be calculated using a computer model and an assessment of effects at these properties included in the EIA Report.

There is no formal guidance on the amount of shadow flicker that is considered acceptable within the UK. Other European countries do have guidance on shadow flicker; however, these vary from one country to another. Guidance which has been utilised in Northern Ireland[12], Germany[13] and Belgium, suggests shadow flicker should not exceed 30 hours per year with a maximum of 30 minutes per day. For the purposes of the shadow flicker assessment, exceedance of 30 hours per year with a maximum of 30 minutes per day would be considered to result in a significant effect which may require mitigation.

The Department of Environment and Climate Change (DECC) studies have shown that in northern latitudes, shadows from wind turbines can only be cast 130 degrees either side of north relative to the turbine due to the orientation of the earth's axis and the positioning of the sun. This equates to a region of 50 degrees either side of due south where a wind turbine will never cast a shadow and therefore properties within this region will experience no effects from shadow flicker.

Opportunities for Enhancing the Environment

No opportunities to enhance the environment from a shadow flicker perspective are envisaged at present.

Proposed Assessment Methodology

There are no formal guidelines currently available on what exposure would be acceptable in relation to shadow flicker. There is no standard for the assessment of shadow flicker.

The proposed assessment method, will however, be based on established best practice guidelines, including the following as published by the Scottish Government, THC, and the UK's Department of Environment and Climate Change:

- The Scottish Government's web-based guide relating to onshore wind turbines (Scottish Government, 2014);
- THC's Onshore Wind Energy Supplementary Guidance (THC, 2022); and
- Update of UK Shadow Flicker evidence base (Department of Environment and Climate Change, 2011).

[12] Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy',

Northern Ireland Department of the Environment (2019), cited in Parsons Brinckerhoff 2011

[13] Notes on the Identification and Evaluation of the Optical Emissions of Wind Turbines, States Committee for Pollution Control – Nordrhein-Westfalen (2002), cited in Parsons Brinckerhoff 2011.

In line with best practice guidelines, for the purposes of the shadow flicker assessment, exceedance of 30 hours per year with a maximum of 30 minutes per day would be considered to result in a significant effect which may require mitigation.

Limitations and Uncertainties

To ensure transparency within the EIA process, the following limitations and uncertainties have been identified:

- No standard shadow flicker requirements apply for the assessment and determination of likely significant effects for shadow flicker effects.
- The proposed assessment methodology is based on a worst-case scenario approach, and does not incorporate ambient weather data, or physical objects (bare-earth terrain model). Therefore, shadow flicker effects may be overestimated at the worst-case scenario approach.

References

- Scottish Government, (2014) The Scottish Government's web-based guide relating to onshore wind turbines
- THC, (2022) Onshore Wind Energy Supplementary Guidance
- Department of Environment and Climate Change (2011) Update of UK Shadow Flicker evidence base
- Department of the Environment, Northern Ireland (2019) Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy'
- Nordrhein-Westfalen (2002) Notes on the Identification and Evaluation of the Optical Emissions of Wind Turbines

Key Questions for Consultees

- *Do you agree with the proposed study area?*
- *Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?*

14.3 Forestry

Consultation

No consultation has taken place to date. The main forestry consultee is Scottish Forestry who will be consulted throughout the EIA of the proposals to ensure that the proposed changes to the woodlands are appropriate and address the requirements of the Control of Woodland Removal Policy and UK Forestry Standard Guidelines.

Study Area

The study area for forestry will comprise the boundary of the Site.

Data sources to Inform the EIA Baseline Characterisation
The Scottish Forestry Map Viewer will be used to source baseline data.
Surveys to Inform the EIA Baseline Characterisation
Forestry Site surveys will include data collection for species, age, crop density, heigh, mensuration data and overall health condition.
Baseline Conditions
The Proposed Development has existing forest land located to the east of the Site boundary and in the southern portion of the Site. The plantation contains Native woodland and PAWS (Plantation on Ancient Woodland Site).
Additional (secondary and tertiary) Mitigation
Impacts on forestry assets will be minimised where practicable during the design of the Proposed Development. If impacts on forestry or woodland cannot be avoided by design, the amount of compensatory planting required to compensate for the loss will be calculated in line with the Scottish Government's "Control of Woodland Removal Policy".
Description of Likely Significant Effects
No likely significant effects are predicted.
Opportunities for Enhancing the Environment
Opportunities for mitigating or offsetting impacts on forestry and woodland will be explored during the EIA process, e.g. by identifying suitable locations for native woodland planting. Any such commitments will be identified within an Outline Habitat Management Plan (OHMP) and/or within a Forestry Appendix to the EIA Report.
Proposed Assessment Methodology
Any areas of anticipated loss of woodland cover as a result of the Proposed Development will be assessed within the EIA Report. These will primarily relate to impacts upon habitat and related species, landscape character and visual amenity and hydrological regimes. Forests are dynamic and constantly changing through landowner activities and natural events. The changes to the forest structure resulting from the incorporation of the Proposed Development will be described within a Wind Farm Forest Design Plan or Forestry Appendix to the EIA report. This will include the changes to, for example, the woodland composition and felling programmes. The forestry baseline will describe the crops existing at time of preparation of the EIA Report. This will include total area, species composition; age class structure, yield class, other relevant crop information, baseline felling and restocking plans, as available. The baseline will be prepared from existing records, site surveys and aerial photography.

The principal output will be the preparation of the Wind Farm Forest Design Plan or Forestry Appendix to the EIA report. This will include a felling plan to show which woodlands are to be felled and when they are to be felled during the life of the Proposed Development. It will further include a restocking plan showing which woodlands are to be replanted and when during the life of the Proposed Development. The changes to the woodland structure will be analysed and described including changes to species composition, age class structure, timber production, traffic movements and the felling and restocking plans. The resulting changes to the woodland structure and any requirement for compensation planting for any woodland loss will be considered in the context of the Control of Woodland Removal Policy and in consultation with Scottish Forestry.

Commercial forestry is not regarded as a receptor for a formal impact assessment. Instead, the Wind Farm Forest Design Plan or Forestry Appendix will be presented in a separate factual Technical Appendix which will describe the changes to the forests and their management, together with a summary in the main Project Description and the description of the design evolution. Information will be presented in text, tables, and diagrams together with maps as necessary.

The effects of the changes to forest design as a result of the Proposed Development will be considered within the relevant chapters of the EIA Report.

Opportunities for compensatory planting and/or habitat improvement will be outlined in conjunction with the Ecology chapter of the EIA Report. This will include consideration of potential effects from the proposed planting upon other disciplines covered within the EIA Report. It is not proposed to include an EIA Report chapter on Forestry, rather a technical appendix relating to Forestry will be appended to the EIA Report,

Relevant policy and guidance which will be considered during the EIA include:

National Policy

- Scottish Forestry Strategy, Scottish Executive 2006;
- Right Tree in the Right Place - Planning for Forestry & Woodlands 2010, Forestry Commission Scotland
- Control of Woodland Removal, Forestry Commission Scotland, 2009;
- The Scottish Planning Policy 2014, The Scottish Government;
- National Planning Framework 4 (NPF4) 2023, The Scottish Government; and
- Climate Change (Scotland) Act 2009.

Regional and Local Policy and Guidance

- Highland Council – Trees Woodland and Development 2013;
- Highland Wide Local Development Plan;
- Highland Forest and Woodland Strategy 2006; and
- Scottish Forestry (2019) Scottish Government's policy on control of woodland removal: implementation guidance.

In Scotland, permanent deforestation is dealt with under the Scottish Government's "Control of Woodland Removal Policy" (Forestry Commission Scotland, 2009).

Key issues for consideration in the EIA

Any woodland removal will be required to demonstrate compliance with the Scottish Government's policy on the control of woodland removal (FCS, 2009).

Where felling is permitted but woodland removal is not supported, conditions conducive to woodland regeneration will be maintained through adherence to good forestry practice as defined in the UK Forestry Standard.

Any areas identified for potential compensatory planting elsewhere within the Site will be assessed for potential impacts by relevant topic specialists.

Limitations and Uncertainties

- No limitations or uncertainties have been realised to date and neither are any anticipated.

References

- Scottish Executive (2006) Scottish Forestry Strategy
- Forestry Commission Scotland (2009) Control of Woodland Removal
- Forestry Commission Scotland (2010) Right Tree in the Right Place - Planning for Forestry & Woodlands
- The Scottish Government (2014) Scottish Planning Policy;
- The Scottish Government (2014) National Planning Framework 3 (NPF3)
- THC (2006) Highland Forest and Woodland Strategy
- THC (2012) Highland Wide Local Development Plan
- THC (2013) Trees Woodland and Development
- Scottish Forestry (2019) Scottish Government's policy on control of woodland removal: implementation guidance

Key Questions for Consultees

- *Do you agree with the proposed list of consultees?*
- *Are there any other key stakeholders or stakeholder organisations that should be consulted?*
- *Do you agree that the data sources listed to inform the EIA baseline characterisation are appropriate?*
- *Are there any additional data sources or guidance documents that should be considered?*
- *Do you agree that the identification of what constitutes the baseline environment is appropriate and that all relevant receptors have been identified?*
- *Do you agree with the proposed factor-specific assessment approach?*

15 CUMULATIVE EFFECTS

15.1 Proposed Assessment Methodology

Schedule 4(5)(e) of the EIA Regulations 2017 states that the EIA Report should include *"a description of the likely significant effects of the development on the environment resulting from… the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".*

Section 4(2) refers to the need to assess *'the interaction between those factors"*. Paragraph 3 identifies those factors as population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape.

There is no widely accepted methodology or best practice for assessing cumulative effects, although various guidance documents exist. However, relevant guidance has been considered including guidance for HRA Appropriate Assessment and guidance from IEMA. Although the Proposed Development does not constitute a Development of National Significance (DNS) or a Nationally Significant Infrastructure Project (NSIP) under the relevant Wales or UK Regulations, the proposed assessment methodology reflects that set out in the Planning Inspectorate's Advice Note 17: Cumulative Effects Assessment ('Advice Note 17'), as this is considered to represent best practice in respect of cumulative effects assessment and also captures the requirements in both the IEMA and HRA guidance.

The following approach will be adopted for the assessment of cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the Proposed Development, the other developments under consideration and the information available to inform the assessment.

The following types of cumulative effects will be considered in accordance with the EIA Regulations 2017 and best practice guidance:

- Intra-project combined effects – the interaction and combination of different environmental residual (post-additional mitigation) effects from within the Proposed Development affecting a receptor; and
- Inter-project cumulative effects – the combined residual (post-mitigation) effects of the Proposed Development and other projects on a single receptor/resource, considering the deviation from the baseline conditions at common sensitive receptors/resources as a result of changes brought about as a result of the Proposed Development in combination with one or more other approved (committed) developments.

Intra-project cumulative effects

The approach to the assessment of interactions of environmental effects will consider the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been identified as experiencing likely significant effects by more than one environmental factor) due to the Proposed Development. The assessment will be based upon residual (post-additional mitigation) effects of '**slight**' or greater significance only. The study area for the assessment will be informed by the study areas for the individual factor assessments.

The assessment of the intra-project combined effects will be undertaken using a two-stage approach:

Stage 1 - Screening

Screening will be undertaken to determine whether a sensitive receptor is exposed to more than one type of residual (post-additional mitigation) effect during the construction and operational phases of the Proposed Development. Those common sensitive receptors exposed to two or more types of residual (post-additional mitigation) effects, with significance of '**slight**' or greater, will be taken forward to Stage 2 of the assessment.

If there is only one type of effect on a sensitive receptor (i.e. only one technical chapter has identified effects on that sensitive receptor), then it will be considered that there are no potential intra-project combined effects and the sensitive receptor will not be taken forward to Stage 2 of the assessment.

Stage 2 – Assessment of Intra-Project Combined Effects

A quantitative assessment of the overall significance of the cumulative effects on common sensitive receptors identified at Stage 1 will be undertaken based on technical information provided in the technical chapters and supporting appendices as well as professional judgement. Given that the types of effects may be very different in some cases, a quantitative assessment may not be possible, and it may be necessary to apply professional judgement in determining the level of significance.

Inter-project cumulative effects

The approach to the assessment of inter-project effects will consider the deviation from the baseline conditions at common sensitive receptors as a result of changes brought about as a result of the Proposed Development in combination with one or more other approved (committed) developments. The assessment of the inter-project effects will be based upon the residual (post-additional mitigation) effects that have been identified in the various factor assessments for the Proposed Development, as well as available environmental information for the approved (committed) developments.

In accordance with Advice Note 17, two clear stages will be taken in identifying the list of approved (committed) developments which will be included within the inter-project cumulative effects assessment:

- Stage 1: establish a long list of approved (committed) developments based on appropriate spatial and temporal limits.
- Stage 2: apply a clear rationale to establish a short list of approved (committed) developments which, in combination with the Proposed Development, have the potential to result in a significant cumulative effect for inclusion within the assessment.

Stage 1: Long List Methodology

With reference to Advice Note 17, the following criteria will be used to establish the 'long list' of approved (committed) developments:

- Schemes that are under construction but that will not be completed prior to the Proposed Development commencing;

- Schemes with planning permission within the last five years14, but not yet implemented;
- Submitted applications but not yet determined;
- Refusals subject to appeal procedures not yet determined; and
- Projects/Sites allocated in the local development plan.

Development projects that are at EIA screening or Scoping stages will not be considered, as they are not considered 'approved' unless otherwise stated in the technical sections.

Where an approved (committed) development meets one of the above criteria, it will be taken forward for further consideration against the following spatial limits to form the long list of approved (committed) developments:

- Employment developments: must lie within the Zone of Influence (ZoI) of the Proposed Development;
- Residential developments: must comprise 10+ dwellings and lie within the ZoI of the Proposed Development;
- Minerals and waste applications: must lie within the ZoI of the Proposed Development;
- Transport infrastructure developments[15]: must lie within the ZoI of the Proposed Development; and
- Approved energy infrastructure developments must lie within the ZoI of the Proposed Development.

The ZoI is defined here as the study area for each environmental factor considered in the EIA for the Proposed Development. The environmental factor-specific study areas, and appropriate justifications for these study areas, will be provided in the EIA Report. The search area for forming the long list of approved (committed) developments will be based on the greatest ZoI in terms of distance.

A planning application search will be conducted to identify approved (committed) developments using relevant planning portals. However, it is recognised that THC as the local planning authority may be aware of additional proposals not yet fully in the public domain and hence comment is sought on any further developments that should, in the authority's opinion, be included in the cumulative effects assessment process.

Only if the approved (committed) developments meet the Stage 1 criteria will they then been taken forward to Stage 2.

Stage 2: Short List Methodology

Following the formation of the long list, the eligible approved (committed) developments identified require further assessment (Stage 2) to establish a short list of approved (committed) developments which, in combination with the Proposed Development, have the potential to result in significant cumulative effects.

[14] A five-year period is considered a reasonable time period to capture all approved developments that still have the potential to be built. Developments with planning permission older than five years will likely have been built or will not likely be built at all

[15] Trunk roads or motorways only, as smaller transport infrastructure proposals would not likely have a significant cumulative effect.

The criteria used to determine whether to include or exclude an approved (committed) development on the short list will reflect the process established by Advice Note 17 and have regard to relevant policy and guidance documents and consultation with the appropriate statutory consultation bodies (particularly the local authority). Advice Note 17 states that the criteria should address the following:

- *"**Temporal scope:** The applicant may wish to consider the relative construction and operation programmes of the 'other existing development and/or approved development' identified in the ZOI together with the* [project] *programme, to establish whether there is overlap and any potential for interaction.*
- ***Scale and nature of development:** The applicant may wish to consider whether the scale and nature of the 'other existing development and/or approved development' identified in the ZOI are likely to interact with the proposed* [project]*. Statutory definitions of major development and EIA screening thresholds may be of assistance when considering issues of scale.*
- ***Other factors:** The applicant should consider whether there are any other factors, such as the nature and/or capacity of the receiving environment that would make a significant cumulative effect with 'other existing development and/or approved development' more or less likely and may consider utilising a source-pathway-receptor approach to inform the assessment.*
- ***Documentation:** The CEA shortlisting process may be documented using Matrix 1 (Appendix 1). The reasons for excluding any development from further consideration should be clearly recorded. This will provide decision makers, consultation bodies and members of the public with a clear record of 'other existing development and/or approved development' considered and the applicant's decision making process with respect to the need for further assessment."*

Advice Note 17 suggests that professional judgement may also be used to supplement the threshold criteria and in order to avoid excluding 'other existing development and/or approved development' that is:

- "*Below the threshold criteria limits but has characteristics likely to give rise to a significant effect; or*
- *Below the threshold criteria limits but could give rise to a cumulative effect by virtue of its proximity to the proposed* [project]."

Taking the above into consideration, the approved (committed) developments on the long list will be reviewed against the following criteria to form the short list of approved (committed) developments:

- **Criteria 1:** The approved (committed) development has a construction, operational and/or demolition phase that is concurrent with the Proposed Development;
- **Criteria 2:** The approved (committed) development and the Proposed Development share common sensitive receptors/resources which are assessed and described in the supporting environmental documentation, and have the potential to be significantly affected by the combination of the approved (committed) development and the Proposed Development; and
- **Criteria 3:** The approved (committed) development has sufficient environmental assessment information freely and publicly available to inform the inter-project cumulative effects assessment. The assessment of each approved (committed) development on the short list will be proportionate to the environmental assessment information available (N.B: An attempt will not be made to assess

the potential environmental effects of any other development to inform the inter-project cumulative effects assessment. If there is an approved (committed) development that it is known will be progressed but has insufficient environmental assessment information, it still may be prudent to consider it in the inter-project cumulative effects assessment. This might take the form of listing the project and why it hasn't been considered in detail, or the potential cumulative effect could be discussed at a high level (qualitatively) using professional judgement).

Where an approved development meets all of the above criteria, it will be taken forward for further consideration in the assessment.

15.2 Determining Significant Cumulative Effects

There is no formal guidance on the criteria for determining significance of cumulative effects. The following principles will be considered when assessing the significance of cumulative effects in relation to both intra-project and inter-project cumulative effects:

- The nature of the receptors/resources affected;
- How the impacts identified combine to affect the condition of the receptor/resource;
- The probabilities of the impacts occurring in relation to each other in such as way so as to produce a cumulative effect; and
- The ability of the receptor/resource to absorb further effects.

The determination of significance for the purposes of this assessment will therefore be made on a receptor basis, taking account of the relevant factor assessments, available environmental information, industry best practice, professional judgement and experience. Levels of significance will be made in accordance with the following definitions:

- **Very Large effect**: effects at this level are material in the decision-making process;
- **Large effect**: effects at this level are likely to be material in the decision-making process;
- **Moderate effect**: effects at this level can be considered to be material decision-making factors;
- **Slight effect**: effects at this level are not material in the decision-making process; and
- **Neutral effect**: no effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

15.3 Limitations and Uncertainties

The assessment of inter-project cumulative effects will be limited to publicly available information obtained from the relevant planning applications on THC planning portal. For some of the identified approved developments, relevant information for this assessment may not be available. Where this is the case, the inter-project cumulative effects assessment will be based upon assumptions and professional judgement, and some statements made will rely on the review of mitigation measures proposed as part of the approved (committed) developments rather than the Proposed Development.

15.4 References

Institute of Environmental Management and Assessment (IEMA) (2011) Special Report on 'The State of Environmental Impact Assessment in the UK'. Available at: https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/2011-State-of-EIA-IEMA.pdf. (Accessed September 2022).

Planning Inspectorate. National Infrastructure Planning advice note (2012), Available at https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/. (Accessed September 2022).

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/580/contents/made. (Accessed August 2022).

UK Government. Habitats regulations assessments: protecting a European Site (2021). Available at https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site. (Accessed September 2022).

16 SUMMARY OF ASSESSMENT SCOPE

In accordance with the EIA Regulations 2017, the EIA Report will be based on the Scoping Opinion received from the Scottish Ministers.

It is proposed that the environmental factors presented in **Table 16.1**, as listed under Regulation 4(2) of the EIA Regulations 2017, are excluded ('scoped out') in their entirety from the scope of the EIA, together with appropriate justification/evidence to support this.

Table 16.1 Environmental factors scoped out

Environmental Factor	Justification/Evidence
Major Accidents and Disasters	Unlikely to be any significant effects relating to Major Accidents or Disasters resulting from or affecting the Proposed Development as Proposed Development comprises standardised energy generating technologies which are governed by health and safety regulations which will be followed during construction and operation.
Heat and Radiation	Due to the scale and nature of the Proposed Development it is not anticipated there would be any significant sources of heat or radiation during construction and operation.
Human Health and Population	It is unlikely there would be any significant effects to Human Health at any stage of the Proposed Development. Additionally, other chapters within the EIA Report will assess potential impacts to health within their own assessments therefore any health impacts, however unlikely, will already be assessed.
Air Quality	Any emissions associated with the construction period would be localised and highly unlikely to impact air quality. Emissions to air during operation are expected to be negligible with the only sources of emissions being occasional vehicles moving in and around the site for routing maintenance.

It is proposed that the environmental factors presented in **Table 16.2**, as listed under Regulation 4(2) of the EIA Regulations 2017, are included within the scope of the EIA.

Table 16.2 Environmental topics scoped in

Environmental topics	Phase(s) to be Assessed	EIA Report Chapter
Landscape and Visual	Construction and operation	Landscape and Visual Impact Assessment Chapter
Ecology	Construction and operation	Ecology Chapter
Ornithology	Construction and operation	Ornithology Chapter
Hydrology, Hydrogeology, Geology and Peat	Construction and operation	Hydrology, Hydrogeology, Geology and Peat Chapter
Archaeology and Cultural Heritage	Construction	Archaeology and Cultural Heritage Chapter
Traffic and Transport	Construction	Traffic and Transport Chapter
Noise and Vibration	Construction and operation	Noise and Vibration Chapter
Carbon Emissions	Construction and operation	Other Issues Chapter
Aviation	Construction and operation	Aviation Chapter
Shadow Flicker	Operation	Other Issues Chapter
Forestry	Construction	Forestry Technical Appendix

Of the environmental factors presented in **Table 16.2** to be included within the scope of the EIA, **Table 16.3** presents the elements of those factors that are proposed to be either scoped in or scoped out of further assessment.

Table 16.3 Elements scoped in or out of further assessment

Receptor	Phase	Scoped In	Scoped Out	Justification
Landscape				
Effects on the landscape fabric of the Site	Construction and operation	✓		Direct physical impacts involve physical alteration or disturbance to the landscape fabric of the Site and could result from the construction of turbine and crane bases, solar panels, new or upgraded access tracks, substations, transformers, cables, battery storage units etc.
Effects on landscape character within a 20 km radius and for LCT which there may be potential for	Operation	✓		Effects associated with construction, on wider landscape character, would be no greater than operational effects on landscape character. Operational effects on landscape character, on LCT beyond 20 km from the proposed

Receptor	Phase	Scoped In	Scoped Out	Justification
significant landscape effects				turbines are unlikely to be significant due to distance.
Designated landscapes/ Wild Land Areas	Operation	✓		Effects associated with construction, on landscape designations and wild land in the wider landscape, would be no greater than operational effects. Due to viewing distance, effects on wider landscape designations and wild land (beyond 20 km) are unlikely to be significant.
Visual effects of residential, recreational and transport receptors across the LVIA study area.	Operation	✓		Visual effects associated with construction, on visual amenity outside the Site boundary, would be no greater than operational visual effects.
Cumulative landscape and visual effects arising through combined, successive and/or sequential interactions with other existing and proposed wind farms.	Operation	✓		Cumulative effects assume that all consented and proposed turbines, in theoretical future baselines, are operational.
Effects on Residential Visual Amenity Assessment for properties up to 3 km of the proposed turbines, subject to a visibility analysis in relation to the final layout's Zone of Theoretical Visibility (ZTV).	Operation	✓		For properties beyond 3 km from the proposed turbines it is unlikely that the residential visual amenity threshold could be breached, based on the scale of turbine under consideration.
Visual effects associated with turbine lighting	Operation	✓		Operational landscape effects associated with aviation lighting will be considered at a broad level, however the focus of the aviation lighting assessment will be on visual effects.
Ecology				
Habitats – Annex 1, SBL, LBAP, potential GWDTEs	Construction	✓		Site supports such habitats and some of the Proposed Development's infrastructure would directly affect these habitats.

Receptor	Phase	Scoped In	Scoped Out	Justification
Deer	Construction	✓		Effects of the Proposed Development on deer will be considered.
Bats (foraging/ commuting)	Operation	✓		Bats have potential to collide with turbines or suffer barotrauma, due to changing air pressure.
Designated sites (Caithness and Sutherland Peatlands SAC and Ramsar, and River Oykel SAC)	Construction	(✓)		Although effects on these designated sites are proposed to be scoped out of detailed assessment, a report to inform HRA concerning these designated sites will be submitted to allow the competent authority to carry out an HRA.
Kyle of Sutherland Marshes SSSI and Grudie Peatlands (ecological features) SSSI	Construction and operation		✓	Spatial separation, adoption of embedded mitigation and absence of pathways for connectivity with the Site.
Common habitats (not Annex 1, SBL, LBAP, potential GWDTEs)	Construction and operation		✓	Widespread/common habitats will not be considered in assessment.
Protected terrestrial mammals (red squirrel, pine marten, wildcat, badger, otter and water vole)	Construction and operation		✓	Adoption of embedded mitigation will ensure that protected species will not be adversely affected. Furthermore, the habitat of some species like red squirrel and pine marten (forestry) will not be affected.
Roosting bats	Construction and operation		✓	No suitable bat roost sites were identified in proximity to the proposed turbines so affects are scoped out of assessment.
Fish (and freshwater pearl mussel)	Construction and operation		✓	Embedded mitigation and sensitive watercourse crossing design will ensure that watercourses (and watercourse biodiversity) will not be affected by works. Effects on fisheries will not be included in assessment, although a report to inform HRA will be included with respect to the River Oykel SAC which has Atlantic salmon and freshwater pearl mussel as qualifying features.

Receptor	Phase	Scoped In	Scoped Out	Justification
Invertebrates, amphibians and reptiles	Construction and operation		✓	Effects on these animal groups are discounted from assessment, in accordance with current guidance.
Ornithology				
Caithness and Sutherland Peatlands SPA and Ramsar	Construction and operation	✓		Site is within known foraging distances of some SPA/Ramsar qualifying species, so species could be affected by works.
Grudie Peatlands SSSI	Construction and operation	✓		Site is within known foraging distances of some SSSI qualifying species so species could be affected by works.
Black grouse	Construction and operation	✓		Lek sites present and species may be disturbed by works.
Golden eagle	Construction and operation	✓		Eagle activity recorded on, and adjacent to the Site.
White-tailed eagle	Construction and operation	✓		Eagle activity recorded on, and adjacent to the Site.
Osprey	Construction and operation	✓		Osprey activity recorded on and adjacent to the Site.
Pink-footed goose	Operational	✓		Pink-footed goose activity recorded through the Site.
Wading species (golden plover, greenshank, dunlin, curlew, snipe)	Construction and operation	✓		Species recorded during surveys, including breeding on-site.
Diver species	Construction and operation		✓	No diver flights recorded during surveys, nor any evidence of breeding in waterbodies.
All other qualifying species of the Caithness and Sutherland Peatlands SPA/Ramsar	Construction and operation		✓	Lack of records for the species, lack of suitable breeding habitat within the Site and/or foraging distances less than 2.5 km (the distance between the SPA/Ramsar and the Site).
Hobby	Construction and operation		✓	Lack of records for the species and lack of suitable breeding habitat within the Site.
Goshawk	Construction and operation		✓	Lack of records for the species and lack of suitable breeding habitat within the Site.

Receptor	Phase	Scoped In	Scoped Out	Justification
All other wetland species	Construction and operation		✓	Lack of records for these species.
Common and widespread raptors, raven and passerines	Construction and operation		✓	Lack of records for these species, suitable breeding habitat within the Site and/or because these species are not considered sensitive to wind farm developments.
Hydrology, Hydrogeology, Geology and Peat				
Surface watercourses	Construction and operation	✓		There is significant potential for damage to surface watercourses arising from all phases of activity from changes to surface flow paths, engineering activities, and contamination from sediment or potentially polluting materials such as oils or fuels.
Private water supplies	Construction and operation	✓		Some PWS are located downstream of the Site so a location-specific risk assessment is required to determine the potential for linkage and impact.
Designated sites	Construction and operation	✓		Some designated sites are located directly downstream of the Site and there is potential for damage to the designated sites and their qualifying interests. These include the River Oykel SAC and Kyle of Sutherland Marshes SSSI.
Flood risk	Construction and operation	✓		Although flood risk to the Site is not anticipated to be a concern, increased flood risk downstream will require consideration and assessment of Site drainage, in line with THC's guidance.
Groundwater including GWDTEs	Construction and operation	✓		It is likely that GWDTEs will be identified within the Site. These will require location-specific assessment to determine their water supply requirements and any potential impacts that may arise from proposals.
Soils & peat	Construction and operation	✓		Previous Site data indicate that some impacts on peat would be unavoidable. Location-specific assessment will be required to manage these impacts.
Cultural Heritage and Archaeology				

Receptor	Phase	Scoped In	Scoped Out	Justification
Direct and indirect impacts upon cultural heritage assets within the Site boundary	Construction	✓		Direct physical impacts involve physical alteration or destruction of heritage assets and could result from the construction of turbine and crane bases, solar panels, battery storage, new or upgraded access tracks, substations, transformers, cables etc.
Effects on the setting of heritage assets within the Site boundary and OSA	Operation	✓		Effects on the setting of heritage assets can arise due to the presence of proposed infrastructure and the potential to detract from understanding of key views from/towards a heritage asset, or a change resulting in an adverse experience of a heritage asset.
Cumulative effects on the setting of heritage assets within the Site boundary and OSA	Operation	✓		A cumulative effect is considered to occur where the magnitude of the combined effect of two or more developments is greater than that of the developments considered separately.
Effects on the setting of heritage assets within the Site boundary and OSA	Construction		✓	Construction phase setting effects would be temporary and are not considered to be significant in EIA due to their very short duration.
Traffic & Transport				
All road users / users or residents of locations	Construction	✓		As per IEMA guidance.
All road users	Operation		✓	Traffic activity associated with ongoing maintenance of the Proposed Development would be significantly lower than during its construction and therefore below the IEMA thresholds that would trigger the need for formal transport assessment.
Noise and Vibration				
Wind Turbine Noise	Operation	✓		Assessment of noise from the wind turbines. Residential receptors within the 35 dB(A) contour line for current scheme therefore monitoring required under the guidance.
Battery storage operation	Operation	✓		Assessment of operational noise from battery storage facility. Noise from operational facility may be perceptible at nearby receptors.

Receptor	Phase	Scoped In	Scoped Out	Justification
PV array	Operation	✓		Potential for noise emissions from the equipment installations associated with the PV array to be perceptible at nearby receptors e.g., inverters and transformers.
Construction Noise	Construction	✓		Assessment of construction noise associated with the erection of the wind turbines, BESS, PV array and all associated infrastructure. Noise from the construction works may be perceptible at nearby receptors.
Vibration	Construction & Operation		✓	The plant with the potential for generating discernible levels of vibration are minimal, and when accompanied with reasonable separation distances between receptor, vibration would be negligible and therefore have been scoped out.
Climate Emissions				
GHG emissions	Construction and operation	✓		As stated by IEMA guidance, any GHG emissions or reductions from a project may be considered to be significant, and therefore must be assessed.
Climate risk	Construction and operation		✓	Climate change in Scotland is projected to result in warmer temperatures, decreased summer rainfall but increased winter rainfall, and sea level rise. None of these trends are anticipated to impact upon the Proposed Development by virtue of its in-built resilience (with respect to temperature) and the elevated position of turbines (with respect to both rainfall and sea level rise).

17 FIGURES

Figure 2.1 – Site Location

Figure 2.2 – Turbine Layout

Figure 2.3 – Environmental Designations

Figure 6.1 – Zone of Theoretical Visibility (tip height) and Viewpoint Locations

Figure 6.2 – Landscape Designations and Wild Land Areas with wind turbine ZTV

Figure 6.3 – Landscape Character Types with wind turbine ZTV

Figure 6.4 – Cumulative Baseplan

Figure 6.5 – Aviation Lighting Intensity ZTV

Figure 6.6 – Solar PV Search Area ZTV

Figure 6.7a – Solar PV Search Area Rosehall Reverse ZTV (Bare-earth)

Figure 6.7b – Solar PV Search Area Rosehall Reverse ZTV (with Screening)

Figure 7.1a – NVC Survey Results

Figure 7.1b – NVC Survey Results

Figure 7.2 – Scottish Biodiversity List (SBL) Habitats

Figure 7.3 – Terrestrial Mammal Survey Results

Figure 7.4 – Priority Peatlands

Figure 8.1 – Vantage Point Locations and Viewshed Coverage

Figure 8.2 – Designated Sites with Ornithological Qualifying Interests

Figure 9.1 – Peat Survey Results and Private Water Supplies

Figure 12.1 – Indicative Noise Contours

APPENDIX A
SIGNIFICANCE CRITERIA

Landscape and visual

The significance of the potential landscape and visual impacts will be determined by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect.

Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental deer 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 professional judgement.

Judgements regarding the sensitivity of landscape or visual receptors require consideration of both the susceptibility of the receptor to the type of development proposed and the value attached to the landscape or visual resource (see tables below). Judgements will be recorded as high, medium, low or negligible.

Sensitivity of Landscape Receptors		
	Higher	Lower
Susceptibility	Attributes that make up the character of the landscape offer very limited opportunities for the accommodation of change without key characteristics being fundamentally altered by wind or solar energy development, leading to a different landscape character.	Attributes that make up the character of the landscape are resilient to being changed by wind or solar energy development.
Value	Landscapes with high scenic quality, high conservation interest, recreational value, important cultural associations or a high degree of rarity. Areas or features designated at a national level e.g. National Parks or National Scenic Areas or key features of these with national policy level protection.	Landscape of poor condition, intactness, limited aesthetic qualities, or of character that is widespread. Areas or features that are not formally designated.

Sensitivity of Visual Receptors		
	Higher	Lower
Susceptibility	Viewers whose attention or interest is focused on their surroundings, including communities/ individual residential receptors/ people engaged in outdoor recreation/ visitors to heritage assets or other attractions where views of surrounding area an important contributor.	People whose attention is not on their surroundings (and where setting is not important to the quality of working life) such as commuters/ people engaged in outdoor sports/ people at their place of work.
Value	Views may be recorded in management plans, guide books, and/or which are likely to be experienced by large numbers of people. Views may be associated with nationally designated landscapes; local authority designated landscapes; designed views recorded in citations for historic parks, gardens/scheduled monuments etc.	Views which are not documented or protected. Views which are more incidental, and less likely to be associated with somewhere people travel to or stop, or which may be experienced by smaller numbers of people.

Magnitude of Effect

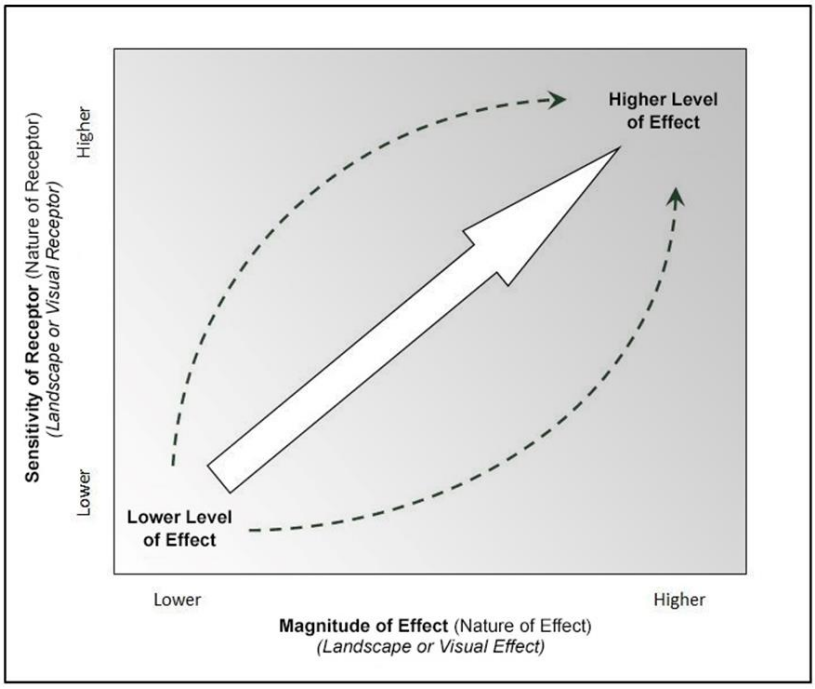
The magnitude of potential impact will be identified through consideration of the degree of change to baseline conditions predicted as a result of the Proposed Development, the duration and reversibility of an impact. Professional judgement will be used in line with best practice guidance and legislation.

Judgements regarding the magnitude of landscape or visual change are recorded as high, medium, low or negligible and combine an assessment of the scale and geographical extent of the landscape or visual impact, its duration and reversibility.

Significance of Effect

The sensitivity of the landscape or visual receptor and the magnitude of the predicted impacts is used as a guide, informed by professional judgement, to predict the significance of the likely effects.

This determination requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Judgements are made on a case by case basis, guided by the principles set out in the diagram below. A rigid matrix-type approach, which does not take on board professional judgement and experience, and where the level of effect is defined simply based on the level of sensitivity (nature of receptor) combined with the magnitude of change (nature of effect), is not used. As such, the conclusion on the level of effect is not always the same.



In terms of the nature of impacts (positive or adverse) there is a wide spectrum of opinion with regard to wind or solar energy development. Taking a precautionary stance, impacts are assumed to be adverse.

Ecology

Sensitivity ratings

Relevant European, national and local guidance from governments and specialist organisations will be referred to in order to determine the sensitivity of ecological receptors, as well as applicable NatureScot guidance considering key ecological receptors for onshore wind developments. Sensitivity will also be determined using professional judgement and taking account the results of baseline field and desk study findings and the functional role of receptors within the context of the geographical area. For the purposes of the assessment the sensitivity of an ecological receptor will be considered in the context of a defined geographical area, as detailed below.

Sensitivity	Definition
Very high - International	An internationally designated site i.e. Special Area of Conservation (SAC) and/or Ramsar site or candidate site (cSAC). Large areas of priority habitat listed under Annex I of the Habitats Directive, and smaller areas of such a habitat that are essential to maintain the viability of that ecological resource. A regularly occurring, nationally significant population of any internationally important species, listed under Annex II or Annex IV of the Habitats Directive.
High - National	A nationally designated site e.g. Site of Special Scientific Interest (SSSI). Significant extents of a priority habitat identified in the Scottish Biodiversity List (SBL), or smaller areas which are essential to maintain

Sensitivity	Definition
	the viability of that ecological resource. A regularly occurring, regionally significant population of any nationally important species listed as a SBL priority species and species listed under Schedule 1 or Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive.
Moderate - Regior	Viable areas of key semi-natural habitat identified in the United Kingdom Biodiversity Action Plan (UKBAP). A regularly occurring, locally significant population of any nationally important species listed on the SBL and species listed under Schedule 5 of the Wildlife and Countryside Act or Annex II or Annex IV of the Habitats Directive. Sites which exceed the local authority-level designations but fall short of SSSI selection guidelines, including extensive areas of semi-natural woodland.
Low - Local	Other species of local conservation, specifically those listed by the Highland LBAP. Areas of habitat or species considered to appreciably enrich the ecological resource within the local context. All other species and habitats that are widespread and common and which are not present in locally, regionally or nationally important numbers or habitats which are considered to be of poor ecological value.

Magnitude ratings

The criteria used to determine the magnitude of impacts are set out below.

Magnitude	Definition
Very high	The impact (either on its own or in-combination with other proposals) may result in the permanent total or almost complete loss of a designated site and/or species/habitat status or productivity.
High	The impact (either on its own or in-combination with other proposals) may adversely affect the conservation status of a designated site and/or species population, in terms of the coherence of its ecological structure and function (integrity), across its whole area, that enables it to sustain the habitat, complex of habitats and/or the population levels of species of interest.
Medium	The impact (either on its own or in-combination with other proposals) would not adversely affect the conservation status of a designated site and/or species in the long-term, but some element of the functioning might be affected and impacts could potentially affect its ability to sustain some part of itself in the short to medium-term.
Low	None of the above applies, but some minor adverse effect is evident on a temporary basis or affects extent of habitat/species abundance in the local area.
Negligible	No observable adverse effect.
Beneficial	The impact is considered to be beneficial to a species or sites nature conservation status.

Significance of effects

CIEEM guidelines do not recommend the sole use of a matrix table as commonly set out in EIA Report chapters to determine 'significant' and 'non-significant' effects. For the purposes of this assessment below sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations which will be used to determine significance of effects on ecological receptors.

Effect (EIA Significance)		
Not significant	Negligible or Low Adverse/ Beneficial	A negligible or low adverse or beneficial effect upon the integrity of an ecological receptor, typically at a site level or below.
Not significant	Minor Adverse / Beneficial	A low or medium, short-term or long-term adverse or beneficial effect upon the integrity of an ecological receptor at a regional level or below.
Significant	Moderate Adverse / Beneficial	A high or very high, long-term or permanent adverse or beneficial effect upon the integrity of an ecological receptor at a regional level or above.
Significant	Major Adverse / Beneficial	A medium or high, medium-term or long-term adverse or beneficial effect upon the integrity of an ecological receptor at a national (Scottish) or international level.

Likelihood ratings

No formal definition, but unlikely, possible and likely are the categories used.

Effects significance matrix

Sensitivity	Magnitude	Likelihood	Significance
Very High	Substantial	Likely	**Major**
		Possible	**Major**
		Unlikely	**Moderate**
	Moderate	Likely	**Major**
		Possible	**Moderate**
		Unlikely	**Moderate**
	Slight	Likely	**Moderate**
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
High	Substantial	Likely	**Major**
		Possible	**Major**
		Unlikely	**Moderate**
	Moderate	Likely	**Moderate**
		Possible	**Moderate**
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible

Sensitivity	Magnitude	Likelihood	Significance
		Unlikely	Negligible
Moderate	Substantial	Likely	**Major**
		Possible	**Moderate**
		Unlikely	Minor
	Moderate	Likely	**Moderate**
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Negligible
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible
Low	Substantial	Likely	**Moderate**
		Possible	Minor
		Unlikely	Negligible
	Moderate	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible

Ornithology

Sensitivity ratings

Relevant European, national and local guidance from governments and specialist organisations will be referred to in order to determine the sensitivity of ornithological receptors, as well as applicable NatureScot guidance considering key ornithological receptors for onshore wind developments, and species with restricted ranges potentially at risk of impacts from wind farms. Sensitivity will also be determined using professional judgement and taking account the results of baseline field and desk study findings and the functional role of receptors within the context of the geographical area. For the purposes of the assessment the sensitivity of an ornithological receptor will be considered in the context of a defined geographical area, as detailed below.

Sensitivity	Definition
Very high - International	An internationally designated site i.e. Special Protection Area (SPA) and/or Ramsar site or candidate/potential site (pSPA). A regularly occurring species present in internationally important numbers (>1% of its biogeographic population) listed under Annex I of the Birds Directive, or regularly occurring migratory species listed under Annex II of the Birds Directive connected to an internationally designated site for this species.
High - National	A nationally designated site e.g. Site of Special Scientific Interest (SSSI). A regularly occurring species present in nationally important numbers (>1% of its Scottish population) and listed as a UK Biodiversity Action Plan (BAP), Scottish Biodiversity List (SBL) priority species Red-listed BoCC (Stanbury *et al.*, 2021) and listed under Schedule 1 of the Wildlife & Countryside Act or Annex 1 of the Birds Directive.

Sensitivity	Definition
Moderate - Regional	A regularly occurring species present in regionally important numbers i.e. >1% of its relevant Natural Heritage Zone (NHZ) population (Wilson *et al*., 2015) or appropriate alternative and listed as a UK BAP, SBL priority species, Red-listed BoCC (Stanbury *et al*., 2021) or listed on Schedule 1 of the Wildlife & Countryside Act or Annex 1 of the Birds Directive.
Low - Local	All other species that are widespread and common and which are not present in regionally or nationally important numbers, but which do contribute to the local breeding/wintering bird assemblage.

Magnitude ratings

The criteria used to determine the magnitude of impacts are set out below.

Magnitude	Definition
Very high	The impact (either on its own or in-combination with other proposals) may result in the permanent total or almost complete loss of a site and/or species status or productivity.
High	The impact (either on its own or in-combination with other proposals) may adversely affect the conservation status of a site/population, in terms of the coherence of its ecological structure and function (integrity), across its whole area, that enables it to sustain the habitat, complex of habitats and/or the population levels of species of interest. E.g. Affecting >5 % of the relevant Regional NHZ population.
Medium	Biodiversity conservation status of a site or population would not be adversely affected, but some element of the functioning might be affected and impacts could potentially affect its ability to sustain some part of itself in the long term. E.g. Affecting >1-5 % of the relevant Regional NHZ population.
Low	None of the above applies, but some minor adverse effect is evident on a temporary basis or affects extent of habitat/species abundance in the local area. E.g. Affecting >1 % of the relevant Regional NHZ population.
Negligible	No observable adverse effect.
Beneficial	The impact is considered to be beneficial to a species or sites nature conservation status.

Significance of effects

CIEEM guidelines do not recommend the sole use of a matrix table as commonly set out in EIA Report chapters to determine 'significant' and 'non-significant' effects. For the purposes of this assessment below sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations which will be used to determine significance of effects on ornithological receptors.

Effect (EIA Significance)		
Not significant	Negligible or Low Adverse/ Beneficial	A negligible or low adverse or beneficial effect upon the integrity of an ornithological receptor, typically at a site level or below.
Not significant	Minor Adverse / Beneficial	A low or medium, short-term or long-term adverse or beneficial effect upon the integrity of an ornithological receptor at a regional level or below (i.e. Local level).
Significant	Moderate Adverse / Beneficial	A high or very high, long-term or permanent adverse or beneficial effect upon the integrity of an ornithological receptor at a regional level or above.
Significant	Major Adverse / Beneficial	A medium or high, medium-term or long-term adverse or beneficial effect upon the integrity of an ornithological receptor at a national (Scottish) or international level.

Likelihood ratings

No formal definition, but unlikely, possible and likely are the categories used.

Effects significance matrix

Sensitivity	Magnitude	Likelihood	Significance
Very High	Substantial	Likely	**Major**
		Possible	**Major**
		Unlikely	**Moderate**
	Moderate	Likely	**Major**
		Possible	**Moderate**
		Unlikely	**Moderate**
	Slight	Likely	**Moderate**
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
High	Substantial	Likely	**Major**
		Possible	**Major**
		Unlikely	**Moderate**
	Moderate	Likely	**Moderate**
		Possible	**Moderate**
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
Moderate	Substantial	Likely	**Major**
		Possible	**Moderate**
		Unlikely	Minor
	Moderate	Likely	**Moderate**
		Possible	Minor
		Unlikely	Minor

Sensitivity	Magnitude	Likelihood	Significance
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Negligible
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible
Low	Substantial	Likely	**Moderate**
		Possible	Minor
		Unlikely	Negligible
	Moderate	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible

Hydrology, Hydrogeology and Geology and Peat

The significance of the potential hydrology, hydrogeology, geology and peat impacts will be determined by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect. The criteria for these are included below.

Sensitivity ratings

Sensitivity	Definition
Very high	The receptor has very limited ability to absorb change without fundamentally altering its present character, is of very high environmental value and/or is of international importance.
High	The receptor has limited ability to absorb change without significantly altering its present character, is of high environmental value and/or is of national importance.
Moderate	The receptor has moderate capacity to absorb change without significantly altering its present character, has moderate environmental value and/or is of regional importance.
Low	The receptor is tolerant of change without detriment to its present character, is of low environmental value and/or of local importance.

Magnitude ratings

Magnitude	Definition
Substantial	Substantial changes, over a significant area, to key characteristics or to the geological/hydrogeological/peatland classification or status for more than 2 years.
Moderate	Noticeable but not substantial changes for more than 2 years or substantial changes for more than 6 months but less than 2 years, over a substantial area, to key characteristics or to the geological/hydrogeological/peatland classification or status.

Magnitude	Definition
Slight	Noticeable changes for less than 2 years, substantial changes for less than 6 months, or barely discernible changes for any length of time.
Negligible or no change	Any change would be negligible, unnoticeable or there are no predicted changes.

Likelihood ratings

No formal definition, but unlikely, possible and likely are the categories used.

Effects significance matrix

Sensitivity	Magnitude	Likelihood	Significance
Very High	Substantial	Likely	**Major**
		Possible	**Major**
		Unlikely	**Moderate**
	Moderate	Likely	**Major**
		Possible	**Moderate**
		Unlikely	**Moderate**
	Slight	Likely	**Moderate**
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
High	Substantial	Likely	**Major**
		Possible	**Major**
		Unlikely	**Moderate**
	Moderate	Likely	**Moderate**
		Possible	**Moderate**
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Negligible/no change	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible
Moderate	Substantial	Likely	**Major**
		Possible	**Moderate**
		Unlikely	Minor
	Moderate	Likely	**Moderate**
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Minor
		Unlikely	Negligible
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible
Low	Substantial	Likely	**Moderate**
		Possible	Minor
		Unlikely	Negligible
	Moderate	Likely	Minor
		Possible	Minor
		Unlikely	Minor
	Slight	Likely	Minor
		Possible	Negligible
		Unlikely	Negligible

Sensitivity	Magnitude	Likelihood	Significance
	Negligible/no change	Likely	Negligible
		Possible	Negligible
		Unlikely	Negligible

Cultural Heritage and archaeology

Importance of Heritage Assets

The importance of a heritage asset is the overall value assigned to it based on its cultural significance, reflecting its statutory designation or, in the case of non-designated assets, the professional judgement of the assessor. Heritage assets of national importance and international importance are assigned a high and very high level respectively. Scheduled Monuments, Inventory Gardens and Designed Landscapes, Inventory Historic Battlefields and Historic Marine Protected Areas are, by definition, of national importance.

The criterion for Listing is that a building is of 'special architectural or historic interest'; following DPSG Annex 2.19, Category A refers to 'outstanding examples of a particular period, style or building type', Category B to 'major examples of a particular period, style or building type', and Category C to 'representative examples of a particular period, style or building type'.

Any feature which does not merit consideration in planning decisions due to its cultural significance may be said to have negligible heritage importance; in general, such features are not considered as heritage assets and will therefore not be considered in the EIA.

Importance of Receptor	Criteria
High	World Heritage Sites, Inventory Gardens and Designed Landscapes, Scheduled Monuments, Protected Wreck Sites, Inventory Historic Battlefields, Category A and B Listed Buildings, Historic Marine Protected Areas, and non-designated heritage assets of equivalent importance that contribute to national research objectives
Medium	Conservation Areas, Category C Listed Buildings, undesignated assets of regional importance except where their particular characteristics merit a higher level of importance, heritage assets on local lists and non-designated assets that contribute to regional research objectives
Low	Locally listed heritage assets, except where their particular characteristics merit a higher level of importance, undesignated heritage assets of Local importance, including assets that may already be partially damaged
Negligible	Identified historic remains of no importance in planning considerations, or heritage assets and findspots that have already been removed or destroyed (i.e., 'Site of')

Magnitude of Impact

The magnitude of an impact is a measure of the degree to which the cultural significance of a heritage asset will potentially change as a result of the Proposed Development (NatureScot & HES 2018, Environmental Impact Assessment Handbook, v5 Appendix 1, para 42). This definition of magnitude applies to likely impacts on the setting as well as likely physical effects on the fabric of an asset.

Magnitude of Impact	Criteria
High	Alterations to an asset and/or its setting resulting in a considerable enhancement or loss of cultural significance. / Preservation of an asset and/or its setting where it would otherwise suffer considerable loss of cultural significance in the do-nothing scenario.
Medium	Alterations to an asset and/or its setting resulting in moderate enhancement or loss of cultural significance. / Preservation of an asset and/or its setting where it would otherwise suffer moderate loss of cultural significance in the do-nothing scenario.
Low	Alterations to an asset and/or its setting resulting in a slight enhancement or loss of cultural significance. / Preservation of an asset and/or its setting where it would otherwise suffer slight loss of cultural significance in the do-nothing scenario.
Negligible	Alterations to an asset and/or its setting resulting in a barely perceptible enhancement or loss of cultural significance. / Preservation of an asset and/or its setting where it would otherwise suffer barely perceptible loss of cultural significance in the do-nothing scenario.

Traffic and Transport

Sensitivity of receptors can generally be considered in terms of assessing the residual capacity of the network under existing road and traffic conditions by examining the capacity of the road compared to its use.

Sensitivity of receptor	Description and Example
High	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs. Includes roads with traffic control signals, waiting and loading restrictions, traffic calming measures. Where a location is a large rural settlement containing a high number of community and public services and facilities.
Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic. Includes roads where there is some traffic calming or traffic management measures. Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Low	Where the road is Trunk or A-class, constructed to accommodate significant HGV composition. Includes roads with little or no traffic calming or traffic management measures. Where a location is a small rural settlement, few community or public facilities or services.
Negligible	Where roads have no adjacent settlements.

Sensitivity of receptor	Description and Example
	Includes new strategic trunk roads that would be little affected by additional traffic and suitable for Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads. Where a location includes individual dwellings or scattered settlements with no facilities.

Magnitude of Impact

Magnitude of impact is a product of the existing traffic volumes, the percentage increase and change due to the Proposed Development, change in the type of traffic and the temporal distribution of that traffic.

Magnitude of Impact	Criteria
Major	These impacts are considered to be material in the decision-making process.
Moderate	These impacts may be important but are not likely to be material factors in decision making. The cumulative impacts of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor.
Minor	These impacts may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in improving the subsequent design of the project.
Negligible	No impacts or those that are imperceptible.

The following thresholds to measure the magnitude of transport related impacts will be used:

	Magnitude of Impact			
Effect	**Negligible**	**Minor**	**Moderate**	**Major**
Driver Delay	< 10% Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Community Severance & Delay	< 10% Increase in traffic	< 30% Increase in traffic	< 60% Increase in traffic	> 60% Increase in traffic
Accidents & Road Safety	< 10% Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Vulnerable Road Users	< 10% Increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		
Wider Disruption due to dangerous loads	0% Increase in traffic	< 30% Increase in traffic	< 60% Increase in traffic	> 60% Increase in traffic
Dust & Dirt	< 10% Increase in traffic	< 30% Increase in traffic	< 60% Increase in traffic	> 60% Increase in traffic

Significance of impacts will be assessed using IEMA guidelines and professional judgement on a scale of Major, Moderate, Minor and Negligible. impacts judged to be 'Moderate' or 'Major' are considered significant, with 'Minor' and 'Negligible' effects considered to be not significant. The following matrix will be used:

Sensitivity of receptor	Magnitude of impact			
	Negligible	**Minor**	**Moderate**	**Major**
Negligible	Negligible	Negligible	Minor	Minor
Low	Negligible	Minor	Minor	Moderate
Medium	Minor	Minor	Moderate	Major
High	Minor	Moderate	Major	Major

Noise and vibration

This section provides an overview of the noise impact assessment that will be undertaken for the project. To inform the assessment the separation distances between the sensitive receptors and Site works will be calculated for each phase of works. For the purposes of the assessment, the following impact magnitude rating criteria have been adopted based on national standards. All receptors are considered to have a high sensitivity to noise.

Significance		Sensitivity rating			
		Very low	**Low**	**Medium**	**High**
		1	**2**	**3**	**4**
Magnitude rating	Very low	1 Negligible	2 Negligible	3 Minor	4 Negligible
	Low	2 Negligible	4 Negligible	Negligible	Minor
	Medium	3 Negligible	6 Negligible	9 Minor	12 Moderate
	High	4 Negligible	5 Minor	12 Moderate	16 Major

Source	Period	Magnitude rating			
		Very low	**Low**	**Medium**	**High**
Construction noise	Day	< 55 dB $L_{Aeq,T}$	55-65dB $L_{Aeq,T}$	65 – 75 dB $L_{Aeq,T}$	> 75 dB $L_{Aeq,T}$
	Night	< 45 dB $L_{Aeq,T}$	45– 50 dB $L_{Aeq,T}$	50 – 55 dB $L_{Aeq,T}$	> 55 dB $L_{Aeq,T}$
Wind Turbine operational noise	Day	The acceptable limits for wind turbine operational noise are clearly defined in the ETSU-R-97 document and these limits should not be breached. Consequently, the test applied to operational noise is whether or not the calculated wind turbine noise immission levels at nearby noise sensitive properties lie below the noise limits derived in accordance with ETSU-R-97.			
	Night				

Source	Period	Magnitude rating			
		Very low	Low	Medium	High
		Depending on the levels of background noise the satisfaction of the ETSU-R-97 derived limits (or simplified ETSU absolute level of 35 dB(A)) can lead to a situation whereby, at some locations under some wind conditions and for a certain proportion of the time, wind turbine noise may be audible. However, noise levels at the properties in the vicinity of the Proposed Development will still be within levels considered acceptable under the ETSU-R-97 assessment method 3.5.2.			
Battery Storage operational noise	Day / Night	In excess of 5 dB (A) below background sound level	In the range of 5 dB(A) below and 5 dB(A) above background sound level.	Between 5 and 10 dB(A) above background sound level.	In excess of 10 dB(A) above background sound level.

Carbon Emissions

The sensitivity of the receptor (i.e. global climate) to fluctuations in GHG emissions is always considered 'High', and so the significance of effects is determined by the magnitude of impact. Aligned with IEMA's Guidance to Assessing GHG Significance (2022), the level of significance can be determined by the extent to which the Proposed Development complies with the goals of the Paris Agreement (i.e., a science-based 1.5°C trajectory). Any project that causes GHG to be avoided, or removed from the atmosphere, has a beneficial effect that is always significant.

Magnitude ratings

Significance	Level	Criteria
Significant	Major adverse	Project adopts a business-as-usual approach, not compatible with the national Net Zero trajectory, or aligned with the goals of the Paris Agreement (i.e., a science-based 1.5°C trajectory). GHG impacts are not mitigated or reduced in line with local or national policy for projects of this type.
	Moderate adverse	Project's GHG impacts are partially mitigated, and may partially meet up-to-date policy; however emissions are still not compatible with the national Net Zero trajectory, or aligned with the goals of the Paris Agreement.
Not significant	Minor adverse	Project may have residual emissions, but the project is compatible with the goals of the Paris Agreement, complying with up-to-date policy and good practice.
	Negligible	Project has minimal residual emissions and goes substantially beyond the goals of the Paris Agreement, complying with up-to-date policy and best practice.

Significance	Level	Criteria
Significant	Beneficial	Project causes GHG emissions to be avoided or removed from the atmosphere, substantially exceeding the goals of the Paris Agreement with a positive climate impact.

APPENDIX B – LIST OF CONSULTEES

Statutory Consultees
Energy Consents Unit
The Highland Council (THC)
Historic Environment Scotland
NatureScot
SEPA
Non Statutory Consultees
British Telecom (BT)
British Horse Society Scotland
Civil Aviation Authority - Airspace
Highlands and Islands Airports
Crown Estate Scotland
Defence Infrastructure Organisation
John Muir Trust
Joint Radio Company
Kyle of Sutherland District Salmon Fisheries Board
Kyle of Sutherland Development Trust
Mountaineering Scotland
NATS Safeguarding
National Trust for Scotland
Nuclear Safety Directorate
RSPB Scotland
Saving Wildcats
Scottish Forestry
Scottish Water
Scottish Wildlife Trust
Scottish Wildland Group
Scottish Rights of Way and Access Society (ScotWays)
Transport Scotland
Visit Scotland
National Grid
Additional Consultees
Kyle of Sutherland Development Trust
The Met Office
The Coal Authority
Community Councils

Creich Community Council
Lairg Community Council
Ardgay and District Community Council
Assynt Community Council
Rogart Community Council

APPENDIX C – TELECOMMUNICATIONS ASSESSMENT REPORT

PAGERPOWER
Urban & Renewables

Telecommunications Impact Assessment

RSK Group PLC

Allt an Tuir Wind Farm

9th August 2022

PLANNING SOLUTIONS FOR:

- Solar
- Telecoms
- Railways
- Defence
- Buildings
- Wind
- Airports
- Radar
- Mitigation

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ADMINISTRATION PAGE

Job Reference:	11562B
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Issue	Date	Detail of Changes
1	28th July 2022	Initial issue
2	9th August 2022	Administrative amendments

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EXECUTIVE SUMMARY

Report Overview

Pager Power has been commissioned to investigate the potential impact of a proposed wind development located west of Glenrossal, Lairg, Scotland, upon wireless communications infrastructure (point-to-point links) in the surrounding area.

The proposed wind development comprises thirteen wind turbines with a maximum tip height of 200 metres above ground level (agl) and a rotor diameter of 163 metres[1].

Overall Results

Arqiva, Atkins, BT, MBNL, The Joint Radio Company (JRC), Virgin Media/O2, and Vodafone have confirmed that they do not operate any communication links within close vicinity of the proposed development and therefore have no objections to the proposed development.

Airwave (Motorola Solutions) has not been contacted at the time of writing. Airwave does not provide link information; they offer their own assessment for a fee. An Airwave assessment has not been progressed at this stage.

Next Steps

Determining the most suitable mitigation option is only possible if a specific impact has been identified. In the case of the proposed development, mitigation is not expected to be a requirement for the proposed development. An overview of possible mitigation strategies has been provided for reference (See Section 5).

If any significant changes are made to the proposed development layout, then the consultees should be contacted again with the updated layout.

[1] The consultation was undertaken based on thirteen wind turbines with a maximum tip height of 230 metres above ground level (agl) and a rotor diameter of 136 metres. This does not affect the conclusions of this report.

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ABOUT PAGER POWER

Pager Power is a dedicated consultancy company based in Suffolk, UK. The company has undertaken projects in 53 countries within Europe, Africa, America, Asia and Australasia.

The company comprises a team of experts to provide technical expertise and guidance on a range of planning issues for large and small developments.

Pager Power was established in 1997. Initially the company focus was on modelling the impact of wind turbines on radar systems. Over the years, the company has expanded into numerous fields including:

- Renewable energy projects.
- Building developments.
- Aviation and telecommunication systems.

Pager Power prides itself on providing comprehensive, understandable, and accurate assessments of complex issues in line with national and international standards. This is underpinned by its custom software, longstanding relationships with stakeholders and active role in conferences and research efforts around the world.

Pager Power's assessments withstand legal scrutiny and the company can provide support for a project at any stage.

1 BACKGROUND

1.1 Introduction

Pager Power has been commissioned to investigate the potential impact of a proposed wind development located west of Glenrossal, Lairg, Scotland, upon wireless communications infrastructure (point-to-point links) in the surrounding area.

The proposed wind development comprises thirteen wind turbines with a maximum tip height of 200 metres above ground level (agl) and a rotor diameter of 163 metres[2].

In detail, this report contains:

- Site description;
- Ofcom and stakeholder consultation to identify relevant:
  - Microwave links;
  - UHF Telemetry links.
- Technical assessment methodology.
- High-level overview of common mitigation options.

[2] The consultation was undertaken based on thirteen wind turbines with a maximum tip height of 230 metres above ground level (agl) and a rotor diameter of 136 metres. This does not affect the conclusions of this report.

2 PROPOSED WIND DEVELOPMENT DETAILS

2.1 Proposed Development Layout

The layout of the proposed development is shown in Figure 1 below.

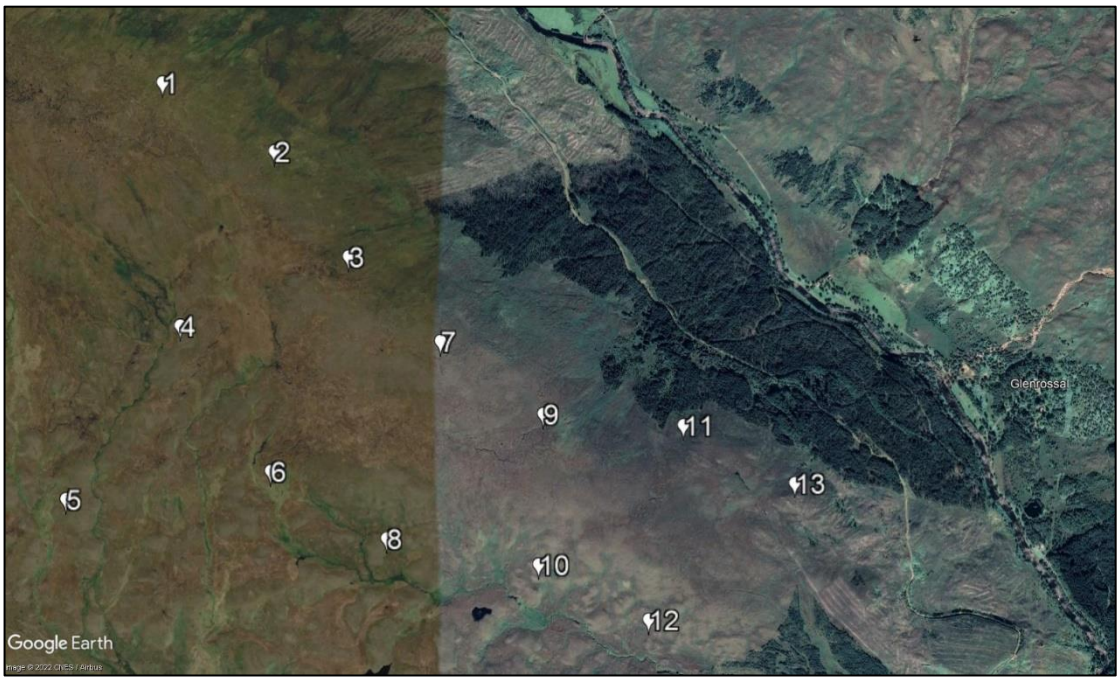

Figure 1 *Proposed development layout*

2.2 Coordinate Data

The proposed turbine coordinates are shown in Table 1 below.

Turbine ID	Easting (British National Grid)	Northing (British National Grid)	Height
1	243186	905582	Tip height is 200 metres above ground level. Rotor diameter is 163 metres.
2	243604	905304	
3	243874	904884	
4	243204	904640	
5	242707	903974	
6	243527	904055	
7	244220	904540	
8	243970	903767	
9	244612	904237	
10	244569	903634	
11	245172	904166	
12	245003	903390	
13	245611	903916	

Table 1 *Proposed turbine coordinates*

3 TELECOMMUNICATIONS CONSULTATION SUMMARY

3.1 Process

Historically, Ofcom has provided on request a list of parties that operate licensed fixed links within a given search radius of a defined location. Since 2018, this process was under review following GDPR requirements and has not been formally restarted[3]. Therefore, consultation was undertaken directly with the most prevalent operators[4] in order to obtain link details. At the time of writing, no further information from Ofcom has been made available.

3.2 Consultation Overview

Table 2 below presents a summary of the consultation to date.

Stakeholder	Summary
Ofcom	Ofcom were not consulted as they are not currently responding to consultation requests. See https://www.pagerpower.com/news/uk-ofcom-suspends-microwave-link-consultation-due-to-gdpr/
Airwave (Motorola Solutions)	Airwave is a company that safeguards fixed communication links for the emergency services and does not provide link details due to confidentiality reasons. An Airwave assessment has not been progressed at this stage.
Arqiva	14/07/22 – PP requested link details. 19/07/22 – Response received. **No objection.**
Atkins	14/07/22 – PP requested link details. 19/07/22 – Response received. **No objection.**
BT	14/07/22 – PP requested link details. 22/07/22 – Response received. **No objection.**

[3] To Pager Power's knowledge.
[4] Based on Pager Power's experience and contacts database.

Stakeholder	Summary
MBNL	14/07/22 – PP requested link details. 18/07/22 – Response received. **No objection.**
JRC	14/07/22 – PP requested link details. 20/07/22 – Response received. **No objection.**
Virginmedia/O2	22/07/22 – PP requested link details. 25/07/22 – Response received. **No objection.**
Vodafone	14/07/22 – PP requested link details. 20/07/22 – Response received. **No objection.**

Table 2 *Telecommunications stakeholder consultation*

4 TECHNICAL ASSESSMENT

4.1 Methodology

Microwave and UHF[5] wireless communication links are used to transmit information between two antennae via radio waves within a particular frequency band. The following subsections present an overview of the interference mechanisms and methodology.

4.1.1 Fresnel Zones

A Fresnel Zone takes the form of an ellipsoid surrounding a link path and represents the area in which obstructions should not be sited in order to avoid diffraction losses. The width of the zone at any point along the link path is determined by the Fresnel Zone number, the frequency of the link and the distance from each link end. The width of the zone is maximal at the midpoint of the link path.

4.1.2 Diffraction – Microwave and UHF Links

Obstructions such as wind developments which are sited in between two microwave link antennae can partially block the radio signal passing between them, thereby reducing the functionality of the link. This can occur even if the obstruction is not directly between the antennae but close to the link boresight[6]. This kind of blocking is called 'diffraction'.

There are various approaches to safeguarding microwave links against from obstruction via wind developments. The most common approaches are:

1. Implementation of a fixed stand-off distance around the link boresight;
2. Safeguarding the relevant Fresnel Zone (discussed below).

The first approach is used by many operators who request a set buffer distance. Set stand offs are occasionally conservative and produce a large exclusion zone distance. The second approach is to assess an obstruction on a case-by-case basis to calculate the most accurate exclusion zone. Pager Power considers the Second Fresnel zone when assessing the effect of a wind turbine upon microwave links and the 0.6th Fresnel zone when assessing UHF links.

4.1.3 Reflections – UHF Links

Obstructions can affect UHF links by reflecting the signal between transmitter and receiver. This is not a significant concern for microwave links because they are highly directional. Reflection effects are not anticipated as no UHF links have been identified. Typically, diffraction effects are likely to be the most significant concern due to the greater abundance of microwave point-to-point links and because both microwave and UHF links are safeguarded against diffraction effects.

[5] Ultra-High Frequency
[6] This is the straight line between the two antennae.

4.2 Identified Telecommunications Links

No telecommunications links have been identified for technical assessment.

5 MITIGATION

5.1 Overview

Although mitigation is not expected to be a requirement for the proposed development, an overview of potential mitigation options for microwave links is given below, and on the following page for UHF links, for reference purposes.

5.2 Microwave Link Mitigation

5.2.1 Overview

The recommended solutions to consider for microwave communications links include:

- Micrositing / Layout Optimisation;
- Re-networking of the link via existing telecommunications sites;
- Use of a leased line.

Further information regarding these options is given below. Other options that can be considered are:

- Construction of a new telecommunications site for the purpose of re-networking solution;
- Use of an alternative technology such as a satellite link.

These options are less likely to be feasible and are not discussed in detail. They could be explored if an impact could not be mitigated by other means.

5.2.2 Micrositing / Layout Optimisation

This is potentially the simplest solution, depending on the available site area.

Ensuring that replanted turbines remain outside the exclusion zones associated with the microwave links and remain more than 250 metres from a microwave link end is likely to remove any potential impact.

5.2.3 Re-networking Solution

In some cases, it is possible to re-network a microwave link via an existing telecommunications site that lies away from the wind farm.

This involves adding an extra node on the link path, so that instead of the signal being sent from End A to End B, it is sent from End A to a re-networking site, and from the re-networking site to End B.

Implementation of such a solution requires identification of a suitable re-networking site, and assessment of the intervening terrain to ensure the appropriate Fresnel zone would not be infringed by terrain for the re-networked link.

The costs and timescales associated with such a solution are variable, however it is likely to be more cost-effective and have a shorter timescale than construction of a new telecommunications site.

5.2.4 Use of a Leased Line

In some cases, it is possible to replace the wireless link with a leased line between the link ends, thereby avoiding potential interference due to the wind development.

The feasibility of such a solution is dependent on the accessibility of each link end with regard to installation of a leased line.

The costs and timescales of the solution are variable and dependent on the individual site locations and the distance between them.

5.3 UHF Telemetry Links

5.3.1 Overview

Three of the most common and cost-effective mitigation options for UHF telemetry link that are affected by wind turbines are:

- Micrositing / Layout Optimisation;
- Use of an alternative scanner;
- Replacement of the UHF telemetry link with a microwave link.

Further information regarding these options is given below. Other options that can be considered are:

- Use of a leased line or fibre optic connection;
- Construction of a new scanning station;
- Use of an alternative technology such as a satellite link.

These options are less likely to be feasible and are not discussed in detail. They could be explored if an impact could not be mitigated by other means.

5.3.2 Micrositing / Layout Optimisation

This is potentially the simplest solution, depending on the available site area. Relocation of any turbines that have the largest interference contribution could prevent any impacts on the link.

Relocating problem turbines away from the link paths may be sufficient to overcome the operator's concerns. Ensuring that replanted turbines remain more than 500 metres from a UHF link end is likely to remove any potential impact.

5.3.3 Use of an Alternative Scanner

In some cases, it is possible to direct the outstations to an alternative scanner. Discussions with the link operator would be required to establish the suitability of such a solution.

5.3.4 Replacement of the UHF Link with a Microwave Link

In cases where reflection issues are the only concern, replacement of the UHF link with a microwave link. This is because microwave links are not prone to reflection issues in the way that UHF telemetry links are. However, microwave links do require radio line of sight to operate, which UHF telemetry links do not. Therefore, detailed assessment of the technical feasibility of such a solution would be required. This would include assessment of radio line of sight between the link ends and establishment of whether the intervening terrain would obstruct the appropriate Fresnel zone.

6 CONCLUSIONS

6.1 Overall Results

Arqiva, Atkins, BT, MBNL, The Joint Radio Company (JRC), Virgin Media/O2, and Vodafone have confirmed that they do not operate any communication links within close vicinity of the proposed development and therefore have no objections to the proposed development.

Airwave (Motorola Solutions) has not been contacted at the time of writing. Airwave does not provide link information; they offer their own assessment for a fee. An Airwave assessment has not been progressed at this stage.

6.2 Next Steps

Determining the most suitable mitigation option is only possible if a specific impact has been identified. In the case of the proposed development, mitigation is not expected to be a requirement for the proposed development. An overview of possible mitigation strategies has been provided for reference (See Section 5).

If any significant changes are made to the proposed development layout, then the consultees should be contacted again with the updated layout.

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APPENDIX D – INDICATIVE WIRELINE VISUALISATIONS

APPENDIX E – SCOPE AND METHODOLOGY OF SOCIO-ECONOMIC STATEMENT (SES)

Matters to be included in the Socio-Economic Statement (SES)

Net Socio-economic Impacts During Construction and Operation

To evaluate the economic impact from project expenditure during construction and operation, an input-output model will be used to calculate the direct, indirect and induced impacts of localised economic activity on the overall economy. The model generates the Gross Value Added (GVA) to the economy and the years of employment supported within the economy as economic indicators of impact.

Government and industry reports will be used to determine the expected capital and operational expenditure associated with the Proposed Development, as well as the breakdown of expenditure by different contracts (e.g., turbine, balance of plant). An assumption will then be made based on the share of each type of contract that can be secured locally, regionally and nationally. This increase in turnover will then be used to estimate the economic impact associated with the Proposed Development.

In order to calculate the economic effect of new jobs, the GVA per head for civil engineering related projects in Highlands and Scotland will be utilised. These figures will be sourced from the Scottish Annual Business Statistics. The economic impact assessment will also take displacement and multiplier effects into consideration to provide a net economic impact figure at the regional, national and UK levels. Multiplier effects will also be built into the economic impact assessment, and these will be sourced from the Type II Output, Income, Employment and GVA Multipliers, produced by the Scottish Government. Additionality factors, including leakages and displacement[16], will be considered to provide net GVA and years of employment. The sum of direct, indirect and induced impacts equals the total GVA and employment supported. This is consistent with Scottish Government advice on net economic benefit[17].

A similar model will also be used for any co-located renewable technologies on the Site (e.g., battery energy storage technology), with the analysis drawing on the experience of deployment of this technology elsewhere across Scotland and the UK.

Initiatives such as community benefit funding and community ownership do not form part of the formal appraisal process within the planning system. However, these shall also be considered within the SES to present a fuller picture of the economic and social impacts that the Proposed Development could have.

[16] Leakage is the proportion of project outcomes that benefit individuals or organisations located beyond the relevant area of impact. Displacement is an estimate of the economic activity, as a result of the proposed Development, that would be diverted from other businesses in the Highlands.

[17] Scottish Government (2016), Net Economic Benefit and Planning.

Matters to be omitted from the SES

Tourism, Recreation, and Community Services

The Project Description and Landscape and Visual Impact Assessment chapters of the EIA will consider amenity and visual impacts on recreation and tourism, so these therefore will not be considered within the SES.

Embedded Mitigation

In accordance with the Construction (Design and Management) Regulations 2015, notices would be placed in prominent locations around the Site to outline areas of restricted access. Measures for ensuring public safety during construction would be secured by the Construction Environmental Management Plan (CEMP), and periods of exclusion would be kept to the minimum necessary for safe working. The CEMP would set out measures to ensure that recreational users are informed of the construction work and directed into safe areas where there would be no conflict with plant and machinery. While there could be indirect visual effects from the construction works, it is considered that these would be temporary and the magnitude of impact would be less than or equal to the visual impacts once the Proposed Development is operational, which have been scoped out as explained below. Therefore, it is not considered that there is potential for significant direct effects on recreational receptors during construction.

Consideration of an Access Management Plan

It is acknowledged that the HwLDP requires an Access Management Plan for Major developments (which the Proposed Development does not classify as but is usually expected for National developments by THC). However, it is not considered that an Access Management Plan is required as part of the Section 36 application, and this could be controlled through a planning condition as required. It is considered that the reasoning above and the final design detail that will be submitted with the application will provide sufficient information, including existing public, non-motorised public access footpaths, bridleways and cycleways on the Site, together with proposed public access provision, both during construction and after completion of the development (including links to existing path networks and to surrounding area, and access points to water) to understand the likely access impacts and mitigation measures proposed.

Housing and Community Services

Furthermore, due to the relatively small size of the workforce and short length of the anticipated construction programme, It is not expected that construction workers from outside local and regional area would have a significant effect on housing, health or educational services. Once the Proposed Development is constructed, only a small workforce would be involved in the operation and maintenance of the proposed infrastructure. Therefore, effects on demand for such community services during construction will not be included in the SES.

Wider economic impacts

Wider economic benefits will not be considered in the SES as they are more speculative and reliant upon local businesses responding to the opportunities available.

Furthermore, regarding the potential benefits to the supply chain, the Proposed Development will provide opportunities for the involvement of suppliers from the Highlands and Islands, and wider

Scotland. The range of activities that suppliers can be involved in include: research and development; design; project management; civil engineering; component fabrication and/or manufacture; installation; and maintenance. There is expertise in all of these areas in the wider region, although a full wind energy supply chain covering all aspects of wind turbine component manufacture has not yet been developed within the region or indeed within Scotland as a whole.

A key contextual consideration will be, with an increasing number of wind farm schemes either operational, under development or having gained consent in Scotland, the commercial viability, and job prospects amongst Scottish supply chain firms has improved. Cluster benefits in the industry increase where firms are supported by the spending of other firms within the renewables sector. The net effect is to increase business and employment opportunities within Scotland's renewable energy sector, boosting the performance of regional and national economies.

In addition, during the construction process, there would be opportunities for those employed to develop skills that would be of benefit to the local economy and local businesses in the longer term. Further, employment generated through the Proposed Development would contribute to diversifying the local economy and help support the retention in the area of the working age population.

Tourism Economy

Literature and empirical evidence listed below, suggest that there is no evidence that wind farms negatively affect the tourism economy in Scotland. Therefore it is proposed that Tourism Economy be omitted from the SES.

Public Attitude Towards Renewable Energy Development

The potential for impact on tourism is closely linked to the public perception of those visiting an area; thus, this Section provides an overview of studies undertaken to assess public perception of windfarm development across the UK.

In 2011, as part of their policy update, VisitScotland investigated the attitudes of UK consumer towards wind farms[18]. The survey was largely attitudinal based and according to the results, windfarms do not have any significant impacts on the levels of tourism with evidence. For example, 52% of the study respondents disagreed that windfarms spoil the look of the UK/Scottish countryside.

Based on this research, VisitScotland published a Position Statement in 2014[19], which stated:

"VisitScotland understands and supports the drive for renewable energy and recognises the economic potential of Scotland's vast resource, including the opportunities for wind farm development… There is a mutually supportive relationship between renewable energy developments and sustainable tourism."

A Department of Energy and Climate Change (DECC) survey[20] on public attitudes showed that in March 2014, 89% of the British public said they supported the use of renewable energy for electricity, heat and fuel in the UK. Furthermore, the BEIS Public Attitudes Tracker: Energy Infrastructure and Energy Sources (2022), published by the Department for Business, showed that

[18] Visit Scotland (2011). Available at: https://ascogfarm.com/wp-content/uploads/2020/07/RES-CD-TOU-006.pdf (accessed April 2023).

[19] Visit Scotland (2014), Visit Scotland (2014), Position Statement – Wind Farms.

[20] Department for Business, Energy & Industrial Strategy (2022), BEIS Public Attitudes Tracker.

79% of people support the development of onshore wind, in comparison to 74% at the start of 2017.

Visit Scotland (2020)[21] research indicates that visitors aspire to be more responsible, both in terms of their personal and environmental impact. VisitScotland identified that travellers are now seeking to consciously off-set the carbon impact of their travel. The use of sustainable energy by local businesses may, therefore, appeal to this type of traveller and promote Scotland as an environmentally friendly and climate conscious country to visit.

Furthermore, the Scottish Government is aware that some communities in Scotland are concerned that the deployment of onshore wind can have a negative effect on tourism. Current evidence suggests that whilst there may be discrete impacts in some cases, this is not the general rule. For example, the Scottish Government's Onshore Wind Policy Statement (2022)[22] considers the potential effect of onshore windfarms on local and national tourism as a significant opportunity to cultivate a 'people and place' approach, by providing economic opportunities in areas that may otherwise be overlooked. The Policy Statement references details many examples of where renewable energy schemes have boosted tourism and recreation across Scotland. For example, Whitelee Wind Farm, developed and operated by the applicant, on the outskirts of Glasgow has provides additional outdoor recreational activities on over 130 km of tracks.

More recently, Copper Consultancy (2023) released a report titled 'Public Attitudes to Renewable Energy' based on responses from across the UK. The report found that only 7% of people do not support local energy projects and for onshore wind the respondents aged in the 16-24 and 25-34 brackets were 50s% supportive, while 35-44 participants hit the 60s% support and over 50s were in the 70s% supportive. The supports the conclusion that onshore wind is recognised as a key source of renewable energy that will contribute to Net Zero ambitions.

Research on the Impact of Onshore Wind Farms on Tourism in Scotland

The most comprehensive study of the potential effects of wind farms on tourism was undertaken by the Moffat Centre at Glasgow Caledonian University in 2008[23]. The study found that, even though there may be minor effects on tourism providers and a small number of visitors may not visit Scotland in the future, the overall impact on tourism expenditure and employment would be very limited. Although the study was conducted over ten years ago, a Scottish Government Report (2012)[24] has confirmed the findings. In subsequent years, wind farms have become increasingly prevalent in Scotland; however, no evidence has emerged to suggest there are any negative effects on the tourism economy.

In 2017, BiGGAR Economics[25] undertook a study into the effects of constructed wind farms on tourism at the national, regional and local level. The report considered tourism employment from 2009 to 2015, a six-year period over which Scotland, and almost all local authority areas, increased the number of wind farms, alongside significant growth in employment in sustainable tourism. The analysis found no correlation between tourism employment and the number of turbines at the

[21] Visit Scotland, Research and Insights. Available at: https://www.visitscotland.org/research-insights (accessed April 2023).

[22] Scottish Government (20202). Onshore Wind Policy Statement.

[23] Glasgow Caledonian University/Moffat Centre (2008), Economic impacts of wind farms on Scottish tourism: report.

[24] Scottish Government ClimateXChange (2012), The Impact of Wind Farms on Scottish Tourism.

[25] BiGGAR Economics (2017). Wind Farms and Tourism Trends in Scotland.

national, or local authority level. Overall, research completed to date suggests that the tourism sector is not adversely impacted by wind farm development.

Additionally, the research considered the impact on tourism employment at a smaller level, in data zones up to 15 km from wind farm developments. The wind farms considered had been constructed between 2009 and 2015. The study compared tourism employment in 2009, when the wind farms did not exist, and 2015, when they have been constructed, to measure the effect of wind farms on local tourism employment. This excluded construction impacts, such as wind farm related employees staying in local accommodation.

At the local authority level, no link was determined between the development of a wind farm and tourism related employment. In 21 of the 28 areas considered, employment in this sector grew. In 22 of the areas, employment in tourism either grew faster, or decreased less, than the rate for the relevant local authority area as a whole.

Overall, the study concluded that published national statistics on employment in sustainable tourism demonstrate there is no relationship between the development of onshore wind farms and tourism employment in the areas immediately surrounding wind farm development, at the local authority level, nor at the level of the Scottish economy as a whole.

Furthermore, over the period of 2010-2019, GVA in the Highlands increased by 87%, compared to 42% expansion of the sector, in the same time period, at a Scottish level. Notably, over this time period, there was a significant increase in the number of wind farm developments, with onshore wind capacity in the Highlands increasing by 1609% from 2009-19[26].

The research findings agree with the conclusions made by the Scottish Parliament's Economy, Energy and Tourism Committee in 2012, when they found no robust, empirical evidence of a negative link between wind farm development and tourism.

Opportunities for Enhancing the Local Environment

Another objective of the SES is to identify how the Proposed Development would enhance the local environment, via access and recreation improvements, as well as the establishment of a local community fund that will support local socio-economic targets via local community benefit contributions.

Access and Recreation

Through the Proposed Development, once built and fully operational, accessibility would be improved and enhanced via the provision of new access tracks that would be maintained during the operation of the Proposed Development.

Community Benefit

Although community benefit funding is not a material planning consideration, THC, via their pre-application development advice report issued on 21st December 2022, specified that THC wants to make sure that local communities benefit directly from the use of their local resources and are compensated for the disruption and inconvenience associated with large scale development work.

Under the terms of HwLDP Policy 31 and THC's Developer Contributions Supplementary Guidance (2018), during its operational life, the Applicant is committed to offering a package of

[26] BiGGAR Economics (2021), Wind Farms and Tourism Trends in Scotland.

benefits to local communities. Should the Proposed Development gain consent, the Applicant would agree to a community benefit fund, committed to assigning a value equivalent to £5,000 per installed MW in line with the good practice principles in the Scottish Government's Community Benefits from Onshore Renewable Energy Developments guidance. The local community fund could then support and enhance local socio-economic targets that may be associated with either of the following: local transport; green infrastructure; water and waste; and public art.